

ICD 08285  
**SPECIAL  
DETAILING ISSUE!**

# FineScale MODELER<sup>®</sup>

FALL 1983 / \$2.25

**An M48A3 moving  
pillbox diorama in  
1/35 scale**

**Superdetailing Testor's  
1/48 F-4E Phantom II**

**Detailing aircraft  
cockpits**

**Steve Zaloga on super-  
detailing armor models  
with photoetched parts**



**Scratchbashing  
a boom truck from  
MPC's 1/25 scale  
Stutz Bearcat**





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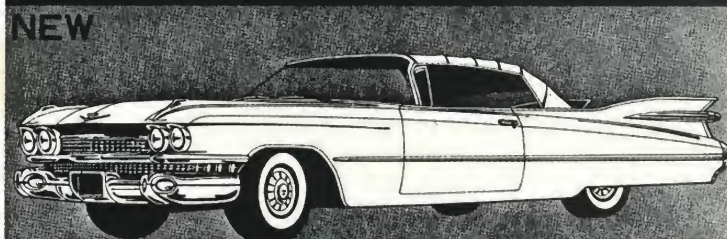
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## ON THE COVER

Detailing is the theme of this issue, and all three of the eye-catching models on our cover are superb — but very different — examples of the art. Roger Jackson's prizewinning 1/48 scale Phantom II (page 22) includes dozens of details not found in the kit — and more individual decal pieces than many kits have parts! While Belgian modeler Francois Verlinden's 1/35 scale M48A3 tank diorama (page 56) features in-the-field details you won't find in any kit, Mic Greenberg's "scratchbashed" 1/25 scale boom truck (page 52) draws heavily on model railroad parts for source material. Photos by Francois Verlinden, Mic Greenberg, and FSM Associate Editor Paul Boyer.



FINESCALE MODELER (ISSN 0277-979X) is published quarterly by Kalmbach Publishing Co., 1027 N. Seventh Street, Milwaukee, WI 53233, (414) 272-2060. SUBSCRIPTION RATES: 8 issues, \$15; with foreign postage (outside the United States) 8 issues, \$19. © 1983, Kalmbach Publishing Co. Title registered as trademark. Second-class postage paid at Milwaukee, WI, and at additional offices. Printed in U.S.A. All rights reserved. This publication may not be reproduced in part or in whole without written permission from the publisher, except in the case of brief quotations used in reviews. POSTMASTER: Send address changes to FINESCALE MODELER, Kalmbach Publishing Co., 1027 N. Seventh St., Milwaukee, WI 53233.

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## FSM UPDATE

FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. Send all material to FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

**Kit releases.** The Guano Aeroplane & Zeppelin Works, 5802 Northeast 59th Street, Seattle, WA 98105, sells an injection-molded, clear styrene, 1/72 scale dustbin ventral bombardier/gunner position for the Ju 52/3m. The price is \$1.50 plus \$.40 for postage and handling. The manufacturer recommends the Testor/Italeri kit. European customers should contact Julian Edwards, 19 Larchwood Glade, Camberley, Surrey, GU15 3UW, England.

International Hobby Corporation, 350 East Tioga Street, Philadelphia, PA 19134, the U. S. distributor for 1/8 Pocher car kits, has announced a price reduction averaging more than \$100.00 per kit.

IPMS/United Kingdom, c/o Bob Morrison, membership administrator, 85 Sycamore Drive, Ash Vale, Aldershot, Hants., GU12 5JY, England, has produced a set of vacuum-formed moldings to make a complete set of slipper fuel tanks for a 1/72 Buccaneer S.Mk.2. New members will receive a set of moldings upon payment of a subscription to *IPMS Magazine*. Subscriptions are £7.50 in the United Kingdom and £11.00 elsewhere.

KPL Models, 703 Cannon Road, Silver Spring, MD 20904, produces and sells vacuum-formed aircraft kits. The kits are molded in thick plastic and come with three-view drawings.



The Fokker Dr.1, kit No. CP-03, the newest kit in the Hasegawa 1/8 Museum Series, is available from Minicraft Models, Inc., 1510 West 228th Street, Torrance, CA 90501. The overall length of the completed model is 28.43" (722 mm) and the wingspan is 32.99" (838 mm). The kit contains 857 pieces and retails for \$350.00.

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, has added three 1/35 Tamiya kits to its "molded for the U. S. armor series": No. MM120A, German Hanomag Sdkfz 251/1 half-track with a crew of 5 soldiers, \$10.98; MM150A, German 8-ton half-track Sdkfz 7/1 with 5 figures wearing winter uniforms, \$13.98; and MT128A, M60A1 medium tank with figure, \$13.98. Two recent 1/6 motorcycle releases are BS0625, Suzuki GSX1100S Katana, \$76.98, and 1626, Honda CX500 turbo, \$79.98.

Monogram Models, Inc., 8601 Waukegan Road, Morton Grove, IL 60053-2295, has released kit No. 5605, 1/72 B-1B strategic

bomber. Other releases include four 1/24 replicas of Grand National stock cars: 2204, Mountain Dew Buick Regal, 2205, Uno Buick Regal, 2206, Wrangler Ford Thunderbird, and 2207, Melling Tools Thunderbird; three 1/48 aircraft kits: 5807, F/A-18 attack fighter, 5808, F-105F Thunderchief, and 5809, F-106A Delta Dart; two kits from the "Masters of the Universe" series: 6014, Attak Trak, and 6015, Talon Fighter; 2200, 1/24 '70 Chevelle High Roller; and 2201, 1/24 '69 Camaro High Roller.



Two recent releases from Revell, Inc., 4223 Glencoe Avenue, Venice, CA 90291, are No. 4520, 1/144 Boeing E-4B Airborne Command Post, and 7332, 1/25 Datsun King Cab Targa.

**Decals.** New 1/144 decals from ATP Incorporated, 3014 Abelia Court, San Jose, CA 95121, are No. AD5025, Pan Am 727-221A Clipper, \$3.00; AD5034, Muse Air DC-9 Super 80, \$2.50; AD5038, Alaska 727-100, Golden Nugget Jet, \$3.00; AD5039, TWA L-1011, \$3.00; AD5040, DC-9 and 737 wing egress path and cargo door, \$.60; AD7277, Federal Express 727-22C, \$1.50; and D-006, Air Wisconsin Metro I or II, \$1.50.

Bare-Metal Foil Co., 19419 Ingram, Livonia, MI 48152, has added these 1/48 decals to its line: No. 48-3, F-4E Phantom, Keflavik, Iceland, \$3.50; 48-4, F-15 Eagle, Luke/Langley, \$3.50; 48-5, F-106A 191st FIG Selfridge ANG Base, Michigan, \$3.75; 48-6, F-106A 102 FIW, 101 FIS Massachusetts ANG, \$3.75; and 48-7, F-106A 177 FIG, 119 FIS New Jersey ANG, \$3.75. Recently released 1/72 decals include 72-4, F-4E Phantom, Keflavik, Iceland, \$3.00; 72-5, F-15 Eagle, Luke/Langley, \$3.00; 72-6, F-106A 102 FIW, 101 FIS Massachusetts ANG, \$3.50; and 72-7, F-106A 177 FIG, 119 FIS New Jersey ANG, \$3.50.

Jet Set System, 549 G La Rambla, Ponce, PR 00731, has released the following 1/144 airliner decals: JSD-114, Delta DC-8, \$3.25; JSD-134, TDA Domestic DC-9-40/80, \$3.00; JSD-140, UTA DC-10-30, \$3.75; JSD-141, UTA 747-200, \$3.75; JSD-144, Southern Airways DC-9-10/DC-9-30, \$3.00; LED-106, Air Gabon 737, \$3.25; and ML-015, TAP Air Portugal 727-100, \$3.25.

**Paints and adhesives.** Du Pont Company, Wilmington, DE 19898, announced that its Lucite spray enamel has been improved to dry dust-free in 15 minutes when applied to wood, metal, and other paintable surfaces. The company says the enamel finish resists chipping, scratching, corrosion, weathering, fading, scrubbing, grease, oil, and gasoline. Lucite spray enamel is available in 18 colors; a red oxide primer also has been added to the line.

The H754 Duradix Super Adhesive from Maxon, P. O. Box 243, Carlstadt, NJ 07072, has a new bonding action and redesigned packaging. The cyanoacrylate cement bonds most materials, works well on flat, even sur-



faces, and generally bonds in 3 to 20 seconds, according to the company. It comes in a 3-gram, stand-up, applicator bottle.

Pacer Technology & Resources, Inc., 1600 Dell Avenue, Campbell, CA 95008, now sells Zap-Lock in both medium- and high-strength grades. Both are safe for metals, plated parts, plastics, and combinations of metal and plastic. They set in 1 to 5 minutes and cure fully in 10 to 15 minutes, according to Pacer. Both medium- and high-strength Zap-Lock are available in a ¼-ounce bottle for \$2.49. High-strength Zap-Lock also comes in a ⅜-ounce bottle for \$4.98.

Two other products Pacer recently introduced are Z-Foam Primer and Z-Magnum. Z-Foam Primer is an accelerator for bonding Styrofoam with cyanoacrylate adhesives. It is available in a 2-fluid-ounce bottle with a pump sprayer for \$4.98. Z-Magnum is a two-part (primer and base resin), no-mix acrylic which develops cure-to-handling strength in about one minute and even more strength in four hours. It will work on oily surfaces. A 1-ounce kit sells for \$5.99.

**Figures.** Ral Partha, 5938 Carthage Court, Cincinnati, OH 45212, now offers boxed sets of "The Best of Ral Partha." Each set contains ten figures for \$8.00. The first four sets available are No. 10-300, Ral Partha Personalities; 10-301, Demon, Trolls, Orcs, and Goblins; 10-302, Angel, Elves, and Elf Lords; and 10-303, "Children of the Night."

The newest release in the collector series of toy soldiers from Vintage Castings, Inc., 127 74th Street, North Bergen, NJ 07047, is the doughboy firing a pistol.



**Accessories and diorama materials.** Ambroid Company, Inc., 600 West Water Street, Taunton, MA 02780, has released a landscaping kit with which you can create up to 25 square feet of scenery. The kit contains 6 rolls of Rigid Wrap, a plaster-impregnated gauze; 2 pounds of Celluclay, an instant papier-mâché; 1 package of Instamold, a fast-setting mold-making compound; 1 pound of PermaStone, a casting compound; 1 pound each of green and black sand; a 4-ounce tube of Se-Cur-It white glue; 1 professional modeling tool; and full instructions. The kit sells for \$27.95.

**Tools.** Byrom International Corporation, Box 246, Chardon, OH 44024, has introduced two products in its Tinytools line. The Tinytools table saw can be used wet or dry and is slotted for ripping and to accommodate an indexing miter gauge up to 45°. The 12-volt table saw gives full torque at 200



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#72-7 F106A, 177th FIG, New Jersey, ANG.....\$3.50  
#48-2 RF84F/K, 191TRG and 127TRG, Mich.ANG \$3.50  
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Two camouflage tips are shown here:



1. Using a mask as shown, spray through the openings, move the mask over the next area to be sprayed. Hold the mask at least 1/2" from surface for a soft edge effect.



2. Another way to achieve the mottled effect is by free-hand spraying. Set the spray width to fine and hold the air-brush close to the surface using tight, erratic hand motions.



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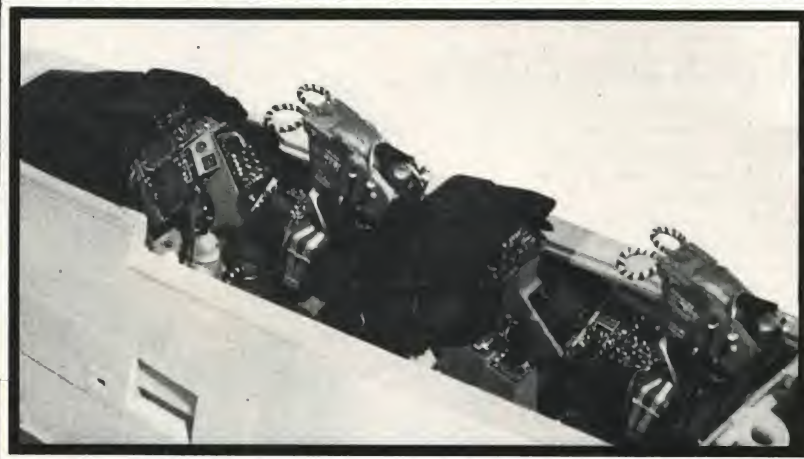
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rpm and all speeds up to 17,000 rpm, according to Byrom. The 12-volt Tinytools disc sander is air-cooled and 3" in diameter. Sanding discs can be changed in three seconds because of a Velcro backing. The disc sander has a removable 4" x 2 3/4" table.

Foredom Electric Company, Route 6, Bethel, CT 06801, has released a miniature drill press stand. The DP-30 has a smooth lever-action drill stroke, and both the drill stroke depth and the drill height are adjustable, according to Foredom. It has a base plate and an adjustable table. The DP-30 is designed for use with Foredom's No. 30 and 44B handpieces and any of Foredom's ten flexible shaft machines which have a variable speed range of from 0 to 14,000 rpm. A free data sheet, No. 288, is available from Foredom.

Millers Falls Tool Company, Second and Harding, P. O. Box 1030, Alpha, NJ 08865, has introduced a new line of soldering guns. They feature a built-in spotlight, dual heat, straight-pull trigger, and 5-second heat-up. The soldering guns are available individually or packed in molded plastic cases with wrench and solder; quick-change tips for soldering, smoothing, and cutting; and self-standing backs to keep the tip in the air during pauses in use. A general-purpose, heavy-duty gun costs \$25.95 separately, \$29.95 with the accessories. A professional gun is \$35.95 separately, \$39.95 with the accessories.

Carl Zeiss, Inc., One Zeiss Drive, Thornwood, NY 10594, sells high-resolution binocular prism loupes in a headband or eyeglass mount; both flip out of the way when not needed. The eyeglass model can be fitted with prescription lenses. The binocular loupes are available in magnifications from 3.2x to 4.5x for use at distances of 10", 14", 18", or 20". Air-to-glass surfaces have an antireflection coating. Write to the Scientific Instrument Division of Carl Zeiss for further information.

**Catalogs.** A free, 48-page, Spring/Summer 1983 catalog of 1,200 aviation books is available from Aviation Book Company, 1640 Victory Boulevard, Glendale, CA 91201. Outside the U. S., send \$2.00 to receive the catalog by airmail.

Hank Clark Jr., Airarchive Specialties, 7285 May Street, Fort Edward, NY 12828, sells 7" x 11" black-and-white photos of almost every American-built aircraft from 1925 to 1950, as well as lithographs by Hank Clark Sr. of many U. S. WWII military aircraft. Send \$2.00 for a sample photo, lithograph, and catalog.

Hannant's, 56 London Road North, Lowestoft, Suffolk, NR32 1EP, England, sells a catalog for \$2.00 which lists books, decals, kits, and paints.

A 32-page Summer 1983 catalog of aviation books is available for \$1.00 from Historic Aviation, 3850 Coronation Road, Eagan, MN 55122.

Send \$1.00 for the 36-page 1983 catalog of books, kits, decals, and other modeling supplies to Jet Set System, 549 G La Rambla, Ponce, PR 00731.

An illustrated catalog of cast accessories for war games and dioramas is available from Mainly Military & MBG Accessories, 103, Walsall Road, Lichfield, Staffordshire, WS13 8AD, England.

Moody Tools, Inc., 42-60 Crompton Avenue, East Greenwich, RI 02818, sells a 36-page catalog for \$2.00. It describes the com-



plete range of miniature hand tools in the Moody and Acu-Min lines.

1983 catalogs of plans, scale drawings, and photos available from Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, are No. 1, aircraft (\$2.60); No. 2, ships (\$3.00); No. 3, armor (\$.50); No. 4, card models (\$.60); No. 5, books (\$.40); and A, Model & Allied Publications drawings (\$1.75). Catalogs 1-5 combined cost \$6.00.

A 64-page Summer 1983 catalog from Squadron Mail Order, 1115 Crowley Drive, Carrollton, TX 75011-5010, sells for \$2.50.

**Miscellaneous.** Color prints of the P-47D Thunderbolt Escort and P-47D Thunderbolt Pursuit by John Ficklen are available from Aero Graphics, P. O. Box 28583, Atlanta, GA 30328. The prints are 18" x 24" and sell for \$55.00 each or \$100.00 for the pair. Add \$3.00 for shipping and handling.

J. J. Daileida, 4314 West 238th Street, Torrance, CA 90505, is the U. S. subscription agent for magazines published by Model & Allied Publications. Send a stamped, self-addressed envelope for information.

IPMS/Hawaii, 1650 Lehi Street, Honolulu,

HI 96818, is selling a 50-page compilation of the first six issues of its newsletter for \$5.00, including postage.

The first in a series of scale documentation packets from Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, features the Mudry CAP 21 aerobatic airplane. The packet sells for \$29.50 postpaid and includes drawing No. 124-RCM, consisting of 4 sheets, each 11" x 17", with scale approximately  $\frac{1}{2}'' = 1'$ , and 4 photo packets with a total of 42 color and 6 black-and-white photos. The drawings and photo packets also may be purchased separately.

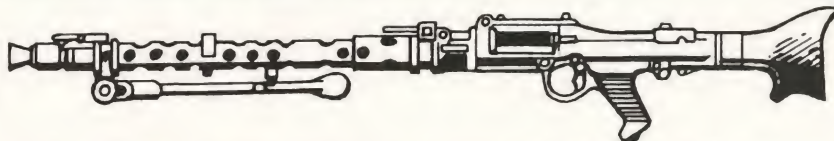
Robert F. Slater, P. O. Box 365, Surrey, BC, V3T 5B6, Canada, plans to compile an annual list of static display aircraft kits, modeling periodicals, monographs, and preserved airplanes. He invites manufacturers of aircraft kits, decals, and scale drawings, publishers of books and magazines on aircraft and aircraft modeling, museum curators, and air show organizers to write for further information.

Unique Woodcraft, Inc., 175 L Penrod Court, Glen Burnie, MD 21061, sells handcrafted display cases in mahogany or oak.

Verlinden Productions, Berlaarsestraat 36, 2500 Lier, Belgium, announces the release of *The Verlinden Way: Military Models and Dioramas, Volume II*, by Francois Verlinden. *Volume III, On Plastic Wings: A Complete Guide to Plastic Aircraft Modeling*, by Francois Verlinden, will be released in October 1983.

**Coming events.** The Military Collectors of New England will hold their ninth annual exhibition and competition on Saturday, September 17, 1983, at the Holiday Inn, Routes 128 and 1, Dedham, Massachusetts. Further information is available from the Military Collectors of New England, P. O. Box 534, Harvard, MA 01451.

The First Annual East Coast Toy Soldier Show will be held on Sunday, November 13, 1983, from 10 a.m. until 4 p.m. at Schuetzen Park Hall, 3167 Kennedy Park Boulevard, North Bergen, New Jersey. Admission is \$2.00 for adults; children under 12 are admitted free when accompanied by an adult. Write to Vintage Castings, Inc., 127 74th Street, North Bergen, NJ 07047, for additional information. **FSM**



## Take a hard look

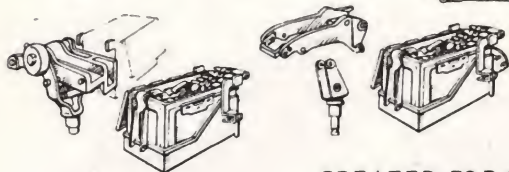
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## FSM READER FORUM

Let us know what you think! Comments, suggestions, corrections, and additional information on FSM articles are welcome in this column. Letters submitted for publication should be clearly marked "To the Editor" on both the envelope and the letter, should be typed or hand-printed, and should be no more than 300 words long.

**Thoughts on those bigger models.** I believe your theories about larger modeling subjects are valid. As evidence within the last five years we've seen a C-47, B-26, and no fewer than two examples each of the B-17, B-25, and B-24 (counting this year's Monogram release) — all of them in 1/48! And, of course, the biggest, the B-29.

I would, however, offer one caveat and one bit of advice to the manufacturers. My wife and I gave up in disgust on a 1/72 Corvette, not because the kit was time-consuming or complex, but because the fit of the parts was poor and the detailing minimal. For a ship that large (over 33" long) and expensive (\$85 retail) this is almost criminal. If it's going to be big, fine, but such details as gun armament, etc. had better be there.

And what about 1/48 scale? For aircraft it offers a size large enough for detailing, but not too large, and is the foundation of a potentially large personal collection. Manufacturers, please take note, and diversify your new releases into 1/48. Give us a B-1B, all right, but remember: Quality is everything and bigness isn't.

John J. DeVries  
Astoria, N. Y.

Regarding your editorial in the Summer 1983 issue, add my vote for bigger models. I began building scale aircraft 10 years ago and selected 1/32 scale models for the detailing potential they offer. But where are all those WWI and other early history-making aircraft I hoped to build? Thanks to Williams Brothers and Hasegawa, there are a few. But, alas! The rest are only visions in my scrapbox.

William E. Dell  
S. Holland, Ill.

**FSM's better than he'd expected!** Just a quick note to tell you how much I appreciate your fine magazine. I have been building models for the past twenty years or so, and was recently involved with the retail sales end of the hobby. When we first heard about your new magazine we were, needless to say, a little skeptical about what we read and heard. However, after reading and rereading the first four issues I must tell you that I am much impressed. The articles and tips are extremely well written, clear and concise, and very helpful in my own modeling.

After reading the Spring issue articles on the Eddie Allen B-29 and Bruce Mathes' article on the F7F Tigercats, I am wondering if any of your readers have any tips to make painting natural metal and color paint schemes easier. I'm thinking mainly of the B-47 and early B-52 colors — natural metal and white undersurfaces. I always have trouble with that design.

Bob Wright

[Help is on the way, Bob. Over the next six months we'll have at least one article on

natural-metal painting techniques, and several authors have promised more articles on the same topic for the future. — B. H.]

**Suggestion: A photo feature.** How about one or two pages of photos sent in by modelers? I've always loved looking at a kit or diorama that's done nicely, and I'm certain others do, too. Besides giving ideas to others, a feature like this would give a lot of modelers a chance for their work to be shown.

Paul Muckler  
Milwaukee, Wis.

**And how about spacecraft?** I've just discovered your fine magazine and have already subscribed. One of my greatest disappointments in the modeling field is the lack of information concerning operational spacecraft. There are volumes of reference materials on famous airplanes, tanks, autos, etc., but what about such things as the old Gemini and Apollo spacecrafts, as well as the shuttles? As a space buff, I feel articles on the *Enterprise*, *Columbia*, and *Challenger* are in order. I've built the large Monogram shuttle, detailing it as *Columbia*, and plan to do *Challenger* as well.

How about it? Meanwhile, keep up the good work!

Jeff Brown  
Wichita Falls, Tex.

[I agree with you that FSM needs more articles on real spacecraft, and we're searching for authors. In fact, I'm working with at least two authors for articles on just that subject, to be published in future issues. Fair enough? — B. H.]

FSM

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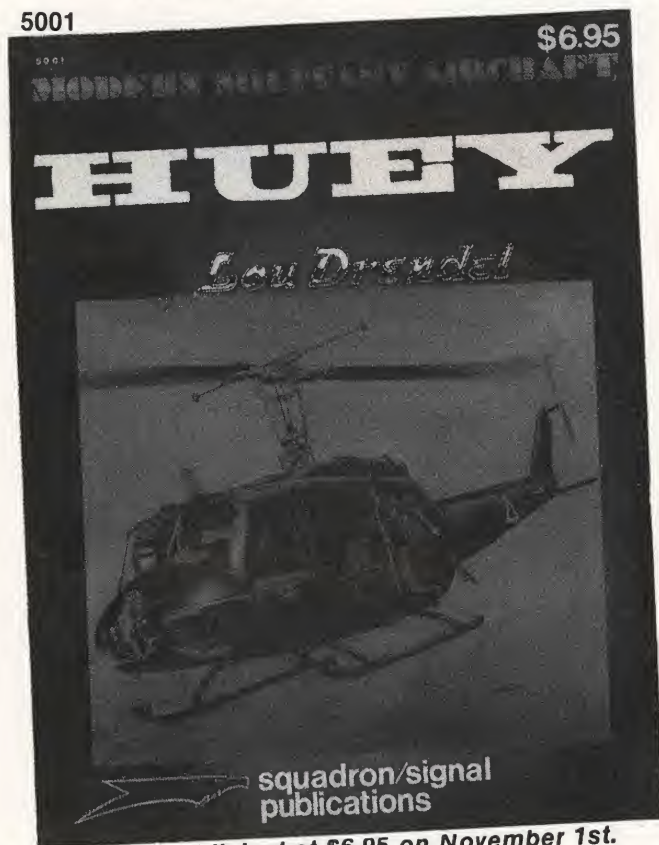
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Every FSM Workbench Review is a first-hand report by a modeler who has actually built the kit or used the product. While our reviewers are encouraged to compare the products to similar ones in their experience, evaluation is of secondary importance; the reviewer's primary goal is to provide a detailed description of the product so FSM readers can evaluate it for themselves. Models shown in Workbench Reviews are built straight from the box.

**Kit:** No. 8038, Peterbilt 359 Conventional  
**Scale:** 1/25  
**Manufacturer:** Ertl, Highways 20 and 136, Dyersville, IA 52040  
**Price:** \$16.25.

THE PETERBILT CONVENTIONAL is one of the most popular subjects for truck models. Ertl uses styrene, vinyl, and 11 cast metal parts in this 151-piece kit. The model features a double sleeper along with movable front wheels and an opening hood. The main frame, rear axles, fifth wheel, and front axle assembly are die-cast metal. The molding is average for the styrene parts; the metal parts needed a little filing to clean up rough edges.

I built the model using Hot Stuff to bond the metal to styrene parts. The model was built and painted in subassemblies starting with the frame, then moving to the wheels, cab, sleeper, and engine. The instruction sheet was unclear and confusing. My first problem was the main frame. Part 112A is a styrene frame cross member which, according to the instructions, needs to have a notch cut out at both ends; however it is not clear which side of the part is to be cut. Unfortunately, I installed the part backwards and did not discover this error until I test-mounted the cab on the frame. A tab beneath the rear of the cab rests on a shelf on part 112A; if the part is installed backwards, the tab misses this shelf and the cab ends up leaning back. Since I had attached this part with Hot Stuff, I had to break apart the bond and reinstall the cross member.

The steering column (No. 101) and floor pedals (No. 114) collided due to the uncertain location of the floor pedals to the interior (No. 100). I also had trouble mounting the rear mud flaps (Nos. 85 and 86) to the



All photos, FINESCALE MODELER: A. L. Schmidt, unless otherwise credited.



rear end of the frame. The rear frame cross member interfered with them and I was forced to shorten their mounting pins. The instructions do not give a part number for the pogo stick and its installation is easily missed in the sketch.

Another assembly problem appeared with the two engine cylinder heads, No. 74. The first diagram does not show the notches that the exhaust manifolds attach to, so it is easy to mount the heads incorrectly. The fit of parts No. 73 and 84 to the rear of the engine and transmission is not well defined. I had to bend parts 104 and 105 to get them to line up to part No. 30. The instructions do not show that part No. 107 attaches to No. 116 as well as to No. 67.

The drive shaft (No. 113) has a small tab

which mounts to a frame cross member, but the instructions do not show that. The exhaust pipe (No. 115) is shown twice, once to show its installation to the chrome muffler pipe, and again as the other end is installed to the engine. After searching the sprues for another exhaust pipe, I realized that this was the same part: very confusing. The instructions label but do not show where parts Nos. 5 and 6 are to be attached, so I had to guess and attached them to the cab.

The parts fit was average and the kit built up into a presentable model. I painted mine with Floquil Bright Gold and overcoated with Floquil Lustre Glaze Red. This combination created a burnt orange "candy apple" effect. I also used Lustre Glaze to tint the fog lamps, taillights, blinkers, and running lights on top of the cab. There were no instructions for painting or decaling, although decals were provided for American and Australian Peterbilts. The box top shows built-up models, but the decals used for them were not those included in the kit. I used a minimum number of the kit-provided decals. The completed model measures 13" x 4" x 5 3/4".

I spent 15 hours on this kit. Due to the unclear assembly instructions, I can only recommend it to modelers who have had experience with truck kits. A novice truck modeler may want to know the names and functions of some of the parts, and exact attachment information, but the poorly designed, no-language instructions will cause many to seek a simpler kit.

Paul Boyer



**Kit:** No. 4719, McDonnell Douglas F-15E Strike Eagle  
**Scale:** 1/32  
**Manufacturer:** Revell, Inc., 4223 Glencoe Avenue, Venice, CA 90291  
**Price:** \$21.60.

THE STRIKE EAGLE is the latest development of the F-15 that will replace aging F-4 Phantom IIs as the Tactical Air Command's primary strike aircraft. It is an uprated two-seat F-15D ground attack aircraft that may see service as an F-111 and Wild Weasel replacement.

Revell's kit contains 209 parts molded in light gray and tinted clear styrene with three rubber tires. The recessed panel lines and molded-in detail are outstanding. I



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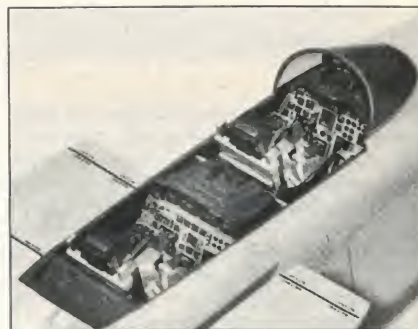
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didn't experience any major fit problems, but the fit of the intakes and the left wing needed a little work. I try to avoid using putty and instead work on the kit parts until they fit.

Normally, I like to add details to the cockpit, but the detailed consoles, instrument panels, sticks, and seats left little to be added. Revell chose to produce an accurate canopy but had to use a two-piece mold to do it. This produced a seam down the middle which I carefully sanded and polished out.

The kit contains the bean-pod-shaped FAST (fuel and sensor, tactical) packs that hug the intakes and wings. A GE 30 mm gun pod, 4 AIM-9L Sidewinders, and 16 500-pound bombs make up the ordnance.

The instruction sheet has 69 no-language steps, many of these involving only a few parts. The only disappointing thing in the kit was the decals. They give you lots of stencils and markings for two aircraft, but my sample was out of register. I supplemented them with various Microscale decals. The marking options include the prototype Strike Eagle in the Europe One camouflage colors and another aircraft in Compass Ghost Grays. I chose the gray version, mixing Pactra enamels to match FS colors listed on a Microscale decal instruction sheet.

The kit scales perfectly with the information in Bert Kinzey's *F-15 in Detail and Scale*. I spent 45 hours on this kit. A modeler who has had a couple of years of experience should enjoy building this impressive model.

Larry Schramm

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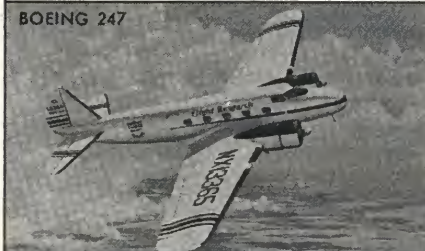
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Kit: No. 1-1920, Shuttle *Tydirium*

Scale: None stated

Manufacturer: MPC, Division of CPG Products Corp., Mount Clemens, MI 48045

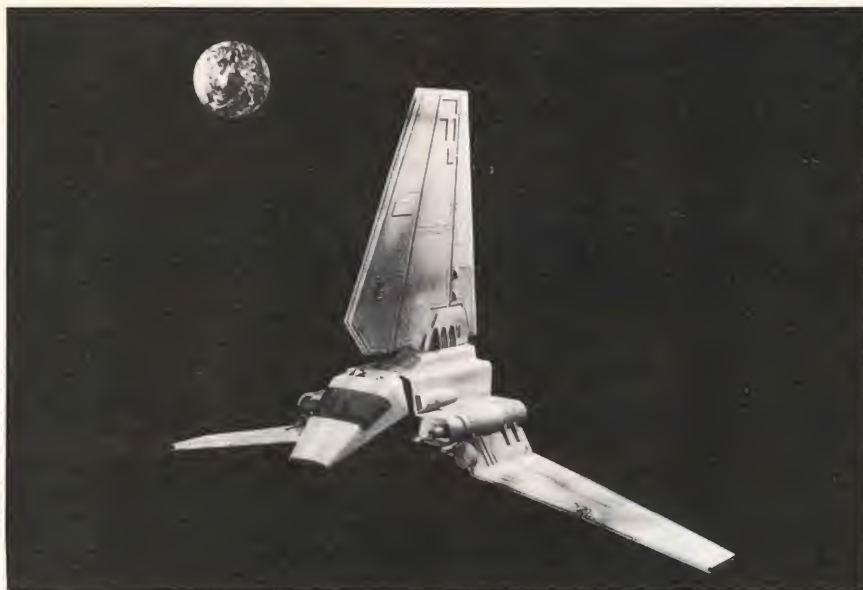
Price: \$13.00.

THE LATEST MOVIE in the *Star Wars* trilogy has brought us a new series of unusual spacecraft and MPC has released models of all the new machines. Perhaps the most intriguing is the Shuttle *Tydirium*, the Imperial spacecraft hijacked by the rebels and used to penetrate the defenses of the planet Endor. Its pterodactyl-like variable-geometry design is sure to make it popular.

MPC's kit contains 61 pieces molded in light gray and tinted clear styrene. The molding is average with both raised and engraved surface detail. The cockpit is well detailed and an operating boarding ramp is included.

The construction is not difficult but the fit is awkward. I had trouble keeping the fuselage halves (Nos. 1 and 2) together after the moving wings were inserted. The three hinges for each wing protrude from slots in the fuselage and when the wings are oper-





ated the hinges bind on the fuselage seam. I recommend careful fitting and a long drying time for the glue before operating the wings.

The landing gear needed some beefing up so I poured gap-filling super glue into their mounts. The folding wings will not sweep all the way down if the landing gear is installed. Apparently the huge vertical sail posed a molding problem for MPC. There is an additional sprue that feeds styrene into the middle of each half. A panel covers this cutout after the sprue stub has been trimmed away. Darth Vader and two pilot figures are included.

I painted the model before I saw the movie and I couldn't help adding a little battle damage with a soldering iron. *Tydirium* never sees battle in the movie. I used various shades of Floquil grays with Antique Bronze around the blaster damage. No decals are provided.

The model took about five hours to complete. The completed model is large with a fully spread wingspan of 20" and the craft measures 11½" high. It can easily be built by novices, young or old, and enjoyed by Jedi knights, droids, and wookies alike.

Paul Boyer



Kit: No. MM-222A, M4A3 Sherman

Scale: 1/35

Manufacturer: MRC Tamiya, Model Rectifier Corporation, Edison, NJ 08817

Price: \$10.98.

THIS IS THE FIRST kit of the Sherman in this popular armor scale to feature the grouzers or "duckbill" track extensions for maneuvering on soft ground. Tamiya's 146-part kit of olive drab styrene with polyvinyl track has been well executed. The detail in

the tracks is exceptional while the remainder of the kit is up to Tamiya's usual high standards. The suspension and the molded-on detail are nicely done. The decal sheet of U. S. Army markings is printed in black and white. The easy-to-follow instructions are in both English and German.

The kit parts fit well with no reworking required. I left off most of the small parts until just before painting to avoid losing them, and I left off the hand tools until after painting. When I got to step 10, I noticed

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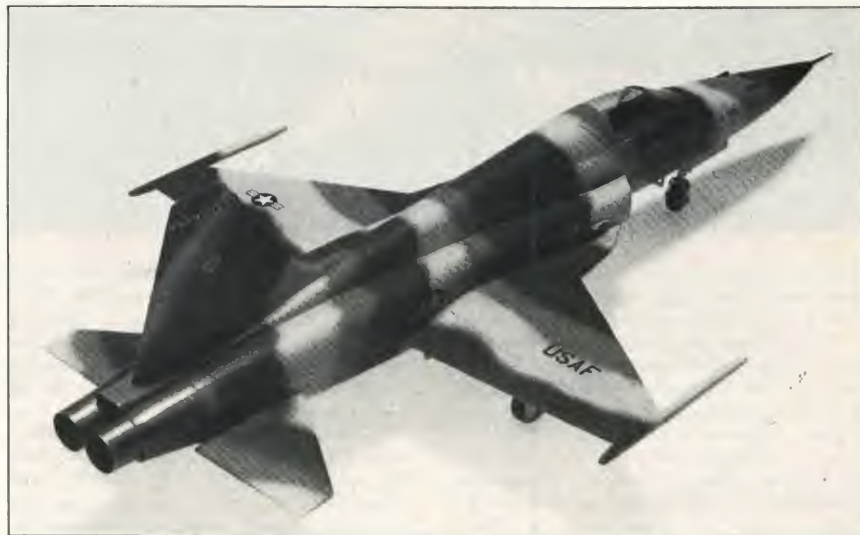
that daylight was visible between the upper  
and lower hull halves when you look into  
the open cupola. I blanked off both sides  
with sheet styrene strips measuring 9/16" x-  
5 3/32". The instructions do not mention that  
you have the option of leaving all the  
hatches open or closed, nor that the old-style  
cupola could revolve 360 degrees.

Some improvements can be made to this  
kit. There is no gun breech provided and  
there is plenty of room for detailing the interior.  
I would cut open the loader's hatch on  
the gun turret and add towing cables and

pintles. There are also conversion possibilities  
to 76 mm and 105 mm gun versions. I  
prefer a full driver figure over the half figure  
given in the kit. Further research on  
markings using available books on the  
Sherman will offer alternate markings to  
the decals.

I would recommend this kit to a modeler  
who has had a few years' experience building  
tank kits. Tamiya has provided a very  
nice kit out of the box and a good starting  
point for a superdetailing project.

Glenn Kreinus



**Kit: No. 686, Northrop F-5E Tiger II**  
**Scale: 1/72**

**Manufacturer: Testor Corporation, 620**  
**Buckbee St., Rockford, IL 61101**

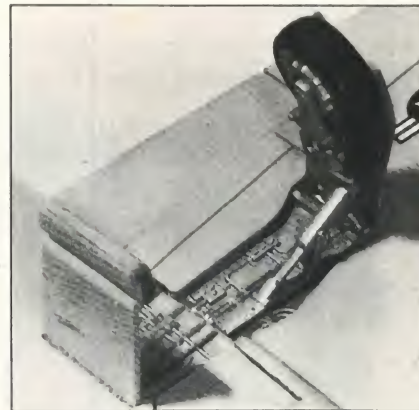
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TESTOR AND ITALERI have produced  
the first 1/72 scale model of this beautiful  
aircraft. This uprated version of the successful  
F-5A was bought by many foreign air  
arms as well as the U. S. A. F and U. S.  
Navy who use them as aggressors simulating  
Soviet-block aircraft in dissimilar air-  
craft combat training.

The 50-piece kit is molded in light gray  
and clear styrene with raised panel line  
detail. The fuselage is split horizontally  
from the tip of the nose to the end of the engine  
housing. The split is placed low, even  
with the wing. The top section includes the  
wing, and is similar to the way that many  
F-16 kits are molded. Since the F-5E has a  
low wing, the bottom piece is small, just big  
enough to include the wheel wells and bottom  
fuselage details.

The fit of the fuselage halves is very good  
except at the point where the wing meets  
the fuselage; there is a gap there that can be  
filled without too much trouble. I had to file  
the intakes and the vertical stabilizer to get  
them to fit perfectly.

The detail in the wheel wells and speed  
brake areas is excellent for this scale. The  
cockpit interior is also very good including  
an engraved instrument panel. The seat is  
good but it is split down the middle, making  
it difficult to clean up the seam. One disappointing  
part is the simple angled piece of plastic  
designed to hold the canopy in the open position.  
This is nothing like the real thing.



Underwing stores include drop tanks,  
AIM-9 Sidewinders, and bombs. The Side-  
winders are too fat and are best replaced  
with those in the Testor-Italeri F-4E/G kit.  
Since many modelers will produce the aggressor  
aircraft, any other ordnance will be  
unnecessary. The drop tanks are good, but  
the bombs were humpbacked and unusable.

Testor's instructions are excellent, with  
Federal Standard 595 color information on  
the 3- or 4-view drawings of each camouflage  
scheme. The kit decals include Swiss  
and Royal Jordanian Air Force Tiger IIs and  
a "Top Gun" Navy aggressor. I used Micro-  
scale sheet No. 72-312 to make a U. S. A. F.  
"Snake" scheme aggressor.

The kit scales accurately with dimensions  
given in Bert Kinzey's *F-5 in Detail and*  
*Scale*. An attractive model can be built in  
about ten hours and modelers with little experience  
should find the kit easy to build.

Paul Boyer





**Kit:** No. 354, Mirage 2000

**Scale:** 1/72

**Manufacturer:** Heller, distributed by Polk's Model Craft Hobbies Inc., 346 Bergen Ave., Jersey City, NJ 07304

**Price:** \$10.95.

THE MIRAGE 2000 is the latest delta-winged aircraft in the successful line from Dassault. Due to enter service with the French Air Force this year, the Mirage 2000 will replace aging Mirage IIIs still in service.

Heller's kit is the only 1/72 Mirage 2000 available so far. The kit contains 42 parts in gray and clear styrene. Surface detail is somewhat sparse and combines engraved and raised panel lines. The quality of the molding is average for a Heller kit; the wheels, afterburner, and intake strakes are nicely done. The fit, however, is below average.

I question Heller's decision on the loca-

tion of the seam joining the upper and lower wing halves. This seam does not correspond to any panel line and requires careful cleaning up. The fit of the wing and intake assemblies to the fuselage requires filling and sanding. I had to file a larger opening to get the afterburner section to fit into the fuselage, and I had to carefully sand the canopy to allow a good fit to the fuselage. The nosewheel didn't line up as it should but I left it alone rather than weaken it. My kit had sink marks on the wheels, missiles, and landing gear.

The canopy is attached to a large sprue so be careful when removing it. The kit can be assembled following the instructions, but I left off the easily broken parts until after the painting was finished.

I was disappointed with the kit's poor-fitting parts. Despite its shortcomings, the kit does build into a presentable model. I recommend it to modelers who have some experience building jets.

*Dennis Moore*



Paul A. Erler

**Kit:** No. 1020, Panhard 178 Armored Car

**Scale:** 1/35

**Manufacturer:** Air Press Models, available from The Arsenal, 1506 Lorraine Ave., Bellevue, NE 68005

**Price:** \$11.95.

THE PANHARD 178 has never been produced in an injection-molded kit, so this vacuum-formed example fills a gap in armored car collections. The kit is molded in .040" sheet styrene and includes 55 parts. The quality of the molding is average for a vacuum-formed kit, with recessed detail and raised rivets. Some of the detail was not well-formed. I modeled the 1935 turret version but an optional 1947 turret and railroad wheels are included.



Fit of the parts was rough. I trimmed the turret front and floor to fit them to the main turret, and I bent the hull and trimmed the hull floor to align them for cementing. I reinforced weak areas and small parts with epoxy putty. I thinned down the muzzle and the taillight shroud for better appearance.

The instructions include an accurate four-view drawing, parts diagram, detail sketches and an exploded-view to ease assembly. No decals are provided. The kit scales well with the Bellona Print No. 19, with the turret base a bit oversize. The completed model measures 6" x 2 1/2" x 2 1/2". It took 25 hours to complete the model, more than I spend on injection-molded kits. I recommend the kit to experienced armor builders who don't mind extra work.

*David Schemel*

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**FINESCALE MODELER** staff photos by  
A. L. Schmidt and Paul A. Erler



## Airliner decals

ATP Inc., 3014 Abelia Court, San Jose, CA 95121, has released a pair of 1/144 scale airliner decals. The two colorful sheets are AD5014 AirCal Boeing 737 and Douglas DC-9 Super 80, and AD5032 PEOPLExpress 737. They are designed to fit the MPC/Airfix kits. Each sheet is \$3.00



## Robin Hood and Sherlock Holmes figures

Imrie/Risley Miniatures, Inc., P. O. Box 89, Burnt Hills, NY 12027, has released 54 mm cast metal figures of legendary Robin Hood and Sherlock Holmes characters. Robin Hood and his three Merry Men are available in set No. C-94 for \$24.00 or separately for \$5.95 each:

- C-95 Robin Hood
- C-96 Will Scarlet
- C-97 Little John
- C-98 Friar Tuck

Sherlock Holmes and Dr. Watson are accompanied by a snarling dog in the Hound of the Baskervilles Group (No. C-100) for \$14.95. Separate figures are available at \$5.95:

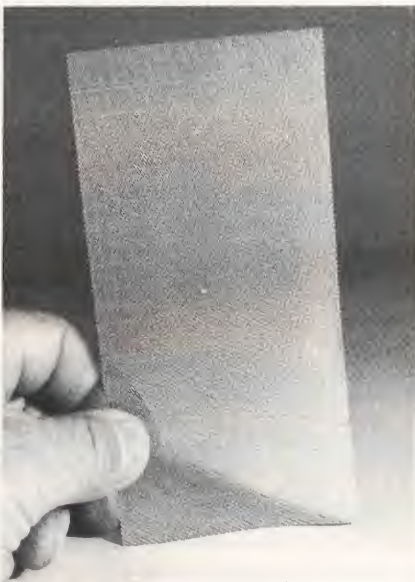
- C-101 Sherlock Holmes with pipe
- C-102 Dr. Watson with cane
- C-103 Professor Moriarty
- C-104 Inspector Lestrade

## Pastel weathering set

Hobby Helpers, 1512 Balmoral Avenue, Westchester, IL 60153, offers the Chalk-Ez



Weathering Set consisting of ten individually boxed colored pastels, including six earth tones and four primary colors. The chalks can be mixed to create any color and are easily removed with water. The set retails for \$4.98.



## Grille material

Scale Scenics, a division of Circuitron, P. O. Box 322, Riverside, IL 60546, offers "Micro Mesh," a nonwoven, raised diamond pattern mesh formed from .005" brass. The sheet measures 3" x 6" and costs \$2.95.

## Brushes

The Testor Corporation, 620 Buckbee Street, Rockford, IL 61101, offers new paint-

brushes in the Model Master line. The line includes:

- No. 2 Golden Synthetic Round, \$2.50
- No. 0 Golden Synthetic Round, \$2.25
- 1/4" Golden Synthetic Chisel, \$3.60
- No. 2 Red Sable Round, \$2.75
- No. 000 Red Sable Round, \$2.25
- 3/8" Camel Hair Flat, \$1.60
- 1/2" Black Sable Flat, \$2.60



## Liquid glue and masker

D. G. Modeling Products, 8080 Langdon Avenue, Van Nuys, CA 91406, produces SuperWeld and SuperMask in 2-ounce bottles. Quick-drying, nonflammable SuperWeld will bond styrene and acrylic plastics and costs \$1.75. SuperMask is a liquid masker that dries quickly and costs \$2.00.



## Pocket pin vise

Davis Diesel Development, P. O. Box 141, Milford, CT 06460, offers a pocket drill set including an aluminum pin vise with a steel collet and pocket clip. Stored inside are 12 twist drills ranging from No. 50 to No. 70. Price of the pocket drill set (No. PDS-12) is \$10.00.





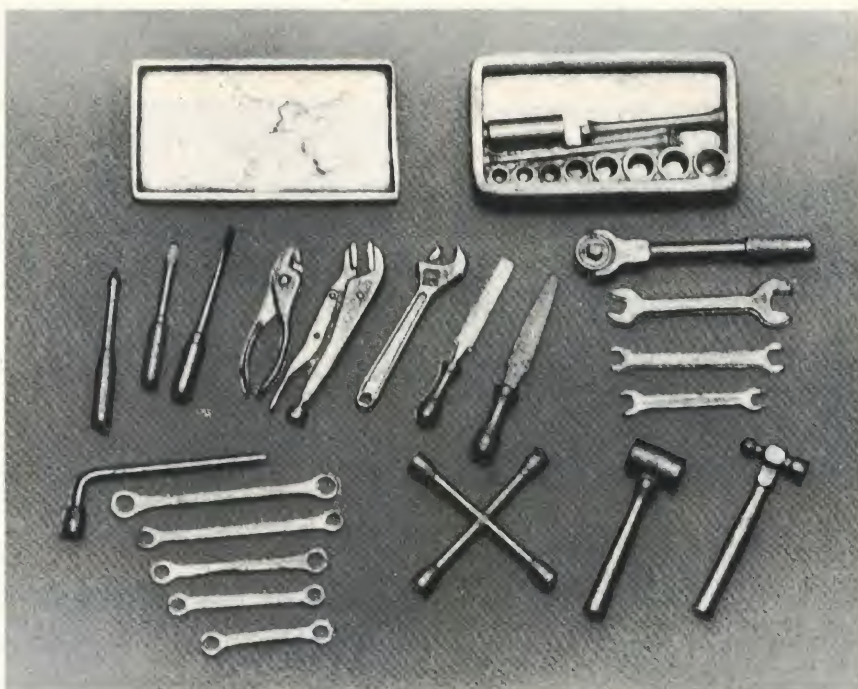


#### Flexible file

Creations Unlimited, 2939 Montreat Drive N. E., Grand Rapids, MI 49505, has released Flex-i-file, an aluminum frame holding a 1/4" abrasive Mylar strip. It can be used to sand in tight spots where sheets of sandpaper won't fit. Flex-i-file costs \$3.98 and includes six assorted abrasive strips. Refills (six strips) of either fine, medium, or coarse grits are available for \$1.00.

#### All-purpose hand chuck

General Tool makes a hand chuck that accepts drill sizes from 1/4" down to a No. 80 (shown) without changing collets. The chuck (No. 285-81) is available for \$4.95 from William K. Walthers, Inc., 5601 West Florist Avenue, Milwaukee, WI 53218.



#### 1/24 scale tools

A set of cast metal tools in 1/24 scale is available from R & D Unique, 14430 31st Avenue South, Seattle, WA 98168. Curbside Dioramics No. RDA-2401 contains 23 pieces including screwdrivers, wrenches, pliers, and files. The set is priced at \$10.00.

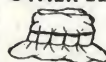


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## FROM THE EDITOR

# How much detail is enough? (with four good answers)

DETAILING IS THE THEME of this issue, and the mention of detailing always brings up an unanswerable question: How much detail is enough? It's altogether too easy to get bogged down in a superdetailing project, and what often happens is that you run out of enthusiasm before even a small part of the model is complete.

So, how much detail *is* enough?

- *How about what comes in the box?* Heresy!, you say, especially in an issue of FSM dedicated to detailing! Well, not necessarily. I meet more and more modelers willing to admit they enjoy simply doing a clean job of assembling a kit, painting it (adequately, not magnificently), and adding the markings that came in the box. The end result is relaxation, which is why most of us picked up that first kit, anyway.

- *More detail than my last model.* As the years and the models go by, the fellow who subscribes to this approach becomes an increasingly tough act for himself to follow, but if you can limit yourself to adding just *slightly* more detail while you refine your techniques, this is a worthwhile strategy. FINESCALE MODELER is aimed squarely at modelers who want their next model to be better than their last, and my guess is that's most of you.

- *Everything — with a capital "E!"* This is the scariest answer of all. I'm hard-pressed to criticize a modeler who sets out to duplicate every feature of the real thing and succeeds, and the results never fail to amaze and inspire. I hasten to add that there are hundreds — maybe even thousands — of half-built (but fully detailed) models out there waiting for the builder to regenerate his enthusiasm. If you decide that "Everything" is your answer, you'd better be ready for the strain!

- *The absolute minimum.* This is also heresy, but sometimes less detail adds up to more. By employing tricks in finishing and presentation, talented modelers are often able to suggest and imply detail instead of modeling it. Viewers *imagine* detail — the model is more than literally meets the eye. Nothing intrigues me more than this sleight-of-hand modeling, and I hope to feature such techniques in future issues.

In the best of all possible worlds each of us would be able to decide exactly how much detail to add to each model, and we'd plan each project so as to complete the model an instant before losing interest in it. That's unlikely to happen, but it's worth keeping in mind as you jot down notes on detailing your next model.

*Bob Haydel*

Editor

FineScale  
**MODELER**

# NEXT ISSUE

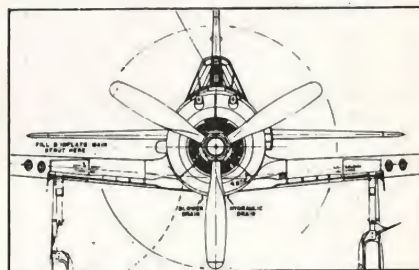
## FEATURES



Acrylic paints for diorama water. FSM: A. L. Schmidt.

In Winter FSM, Joe Gianfrancesco starts with a Revell Albatros D-III and ends up with a 1/72 scale Albatros D-II. Along the way, Joe reveals his techniques for scratch-building replacement wings, detailing the engine, and simulating wood grain on the fuselage. You'll also find an in-depth look at decals and how to use them by FSM Associate Editor Paul Boyer, plus features on creating diorama water with acrylic paints, and photographing aircraft models — on a carrier deck of your own!

## DATA/DRAWINGS



Vultee P-66 Vanguard drawings by Dick Gleason.

Winter FSM will feature detailed scale drawings of a rare warbird, the Vultee P-66 Vanguard. Accompanying the plans and photos of this aircraft you'll find a how-to-do-it article on modeling the P-66 in an unusual material.

**ALL IN  
WINTER  
FSM!**





Photos on the *Car and Driver* pages behind the model are ©1983 by Al Satterwhite.

## FSM SHOWCASE

# Jeff Luser's 1/16 scale Shelby Cobra

**J**EFF LUSER is no stranger to fast sports cars. He has driven an E production Alfa Romeo Spider in Sports Car Club of America road races for the last two years, following his father's love for the sport. Jeff attends the Colo-

rado Institute of Art and has been modeling for 14 years. He told FSM how he modeled the legendary Cobra.

"Carroll Shelby's Cobra set the pace in the GT classes in racing circles in the late sixties. I have always liked the

car, so I just had to build a model of it. Owning a real one is a dream that is a little out of reach right now.

"I enjoyed reading an article in the April 1981 issue of *Car and Driver* magazine. The Cobra's racing record

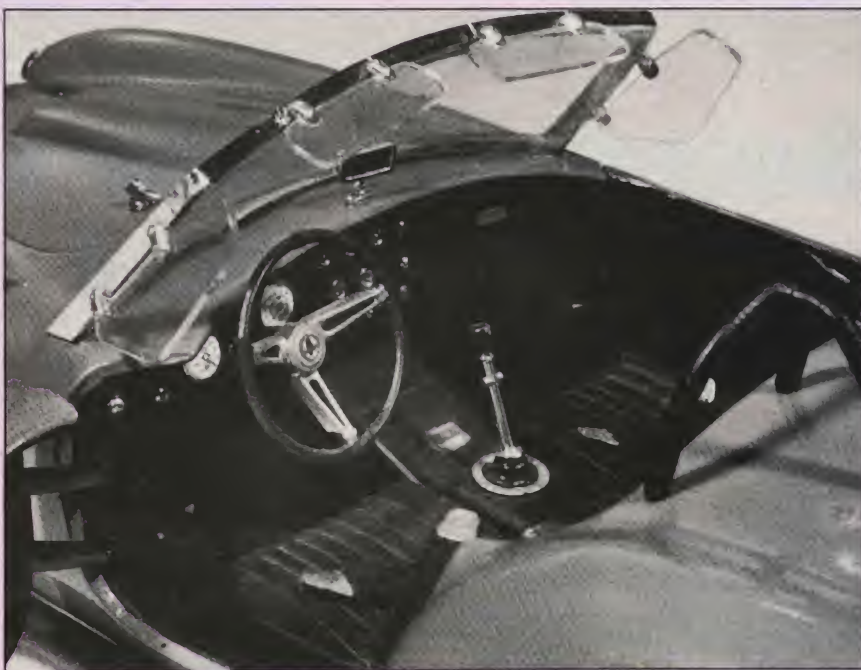




Jeff's project was inspired by a colorful article in *Car and Driver*. He modified MPC's 1/16 scale Shelby Cobra only slightly and added details to make the kit more closely match the car in the photos.



Ford's 427-cubic-inch V-8 gave the Cobra acceleration unmatched in its day. Added details here include radiator hoses, the fuel line, and ignition wires.



All model photos, FINESCALE MODELER: A. L. Schmidt

The Cobra interior was a basic, no-nonsense cockpit. Jeff added cloth seat belts detailed with the kit's buckles.

was astounding in the days when the Ferrari was the car to beat. Although the Cobra was by no means a good-handling car, its power-to-weight ratio made for quick acceleration and a top speed of 162 mph. And the Cobra was street-legal!

"I modified MPC's 1/16 scale kit to represent the Cobra featured in the *Car and Driver* article. I replaced the

side-mounted mufflers with copper tubing. The kit engine was nicely detailed, but I added ignition wires made of thread and the radiator hoses and fuel line from a Formula 1 car kit. I substituted some scrap cloth for the seat belts but used the kit buckles.

"I hand painted the interior and engine compartment black, with white, yellow, red, and silver details. The en-

gine block was painted dark blue. The exterior was painted with a spray can of Ford Red auto paint. I hand painted the '427' insignia above the front louvers and added the kit's decal license plate.

"Since I had an extra copy of the *Car and Driver* article, I took out the lead spread and mounted it on foam-core illustration board to make a simple but unusual display base."

FSM





The angular lines of the Phantom II are most evident in this head-on shot. Roger added tiny rearview mirrors from plated acetate.

All photos, FINESCALE MODELER: Paul Boyer unless otherwise credited.

# Superdetailing Testor's 1/48 F-4E Phantom II

A shark-mouthed MiG killer in Vietnam-era dress

BY ROGER JACKSON

**A**LTHOUGH there have been a number of accolades bestowed upon the McDonnell Douglas F-4 Phantom II, one thing is certain: It was the most significant fighter aircraft of its time. The Phantom II first flew in 1958 and soon proved its superiority over contemporary designs. It has dominated the fighter aircraft scene to the point where it has flown in 11 foreign air arms as well as being front line equipment for all the U. S. services.

The past few years have seen a flood of F-4 kits released by the model manufacturers, with more expected in the near future. The kits released thus far feature varying degrees of detail, accuracy of scale, and proportion.

I selected the Testor 1/48 F-4E/G (kit No. 583) for this project. Several other kits provided detail parts which were not included in the Testor kit. This way

I was able to select the finest components available, reducing the number of scratchbuilt items to a minimum.

I began by taping the major airframe parts together with masking tape. This allowed me to critique the model and note the various areas which would require attention.

**Detailing the cockpit.** Since it has much better detail, I installed the cockpit interior and seats from the Monogram F-4C/D into the assembled fuselage halves. I added details such as throttles, new CRT shroud for the rear panel, and replaced the pull rings on the ejection seats. An M. V. Products\* green marker lens was installed in the front panel to simulate the pilot's radar screen, Figs. 1 and 2.

**Modifying the wing.** Since I was building a Vietnam War F-4E, the slats on the Testor kit would have to go since they were added after the war.

\*M. V. Products, P. O. Box 6622, Orange, CA 92667.

The unslatted upper wing panels from the Testor RF-4C (kit No. 582) fit the lower wing assembly without modification. The holes for the slat actuators on the lower inboard panels were filled in and sanded smooth. I made the wingtip navigation lights from tinted plexiglass and the formation lights from yellow scrap sprue. I made the fuel system purge vents from sheet styrene and attached them to the trailing edge near the wing fold line. The fit of the wing to the fuselage was nearly perfect.

**Intakes.** The intake ramps, parts Nos. 22 and 24, have a rectangular depression molded on the back side which is not on the real aircraft. I filled the depression with a small rectangle of sheet styrene and faired it in with Hot Stuff Super T. The intakes were then assembled, attached to the fuselage and faired in. I used Hot Stuff adhesive exclusively to construct this model because of its strength and its capability to bond styrene to dissimilar materials such as aluminum.

**Fuselage details.** The pitot tube was made from a broken No. 77 drill bit inserted into a No. 20 transfusion needle. I inserted this combination into a 1/2" length of 1/16" K & S tubing faired into the tip of the radome. The outside diameter of the No. 20 needle matched the inside diameter of the tube.

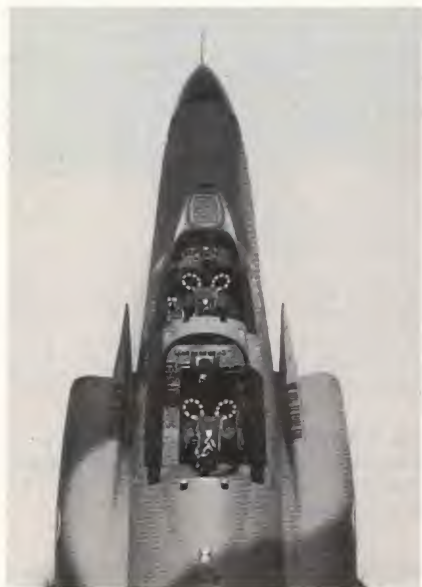
The oval-shaped cannon port was drilled out and the gas purge vents on the ventral side of the gun fairing were





Bob Wheeler

**Fig. 1.** Roger used the 1/48 scale Monogram F-4C/D cockpit with added details of wire, stretched sprue, and a miniature lens for the radar screen. Monogram's cockpit fits into the Testor kit with slight modification.



**Fig. 2.** The completed cockpit installed in the Testor kit. The lens mounted behind the cockpit represents the aerial refueling floodlight. Note the rain remover nozzle forward of the windscreen.

added using stainless steel photo-etched air intake grille from Detail Associates,\* Fig. 3. This grille is ideal for aircraft model louvers. Most model railroad shops stock these items.

The equipment bay cooling ducts, parts Nos. 20 and 26, were attached to the forward fuselage. A moderate amount of filling was needed to properly blend these parts to the airframe. I used masking tape to protect the recess at the front of the duct while sanding and shaping. I used a jeweler's file to cut a slot for the nozzle of the rain remover immediately forward of the windscreen, Fig. 2.

**Moving aft.** I removed the wedge-shaped panels from the upper surfaces of the stabilizers. This was a retrofitted item installed in late 1972 and

\*Detail Associates, P. O. Box 197, Santa Maria, CA 93456.



The business end of the F-4E. Combat experience in Vietnam brought about the addition of the M61 Vulcan 20 mm cannon in the nose of the Phantom II.



Roger's superdetailed F-4E stands ready for a MIGCAP (MIG Combat Air Patrol) mission. The scratchbuilt boarding ladder adds a touch of realism.

was not present on this particular plane during the Vietnam War. I used a small jeweler's file to open the rudder APU exhaust outlets next to the tip of the arresting hook. I discarded the kit-supplied arresting hook in favor of one taken from the Monogram kit. I installed it with a hinge made from .040" sheet styrene and 1/16" K & S aluminum tubing, Fig. 4.

There is a small gauge behind a square window on the right side of the aft fuselage. I reproduced it by installing a small square peg of clear sprue that was sanded and polished on both sides. I then used a decal cut from an instrument panel and applied it to the back side of the window, Fig. 5.

The sheet metal shrouds over the ex-

haust pipes are poorly represented in the kit. I made improved ones from sheet styrene and faired them in, Figs. 4 and 5.

The clear sprue navigation light was added to the end of the fin cap and a small chunk of red-tinted plexiglass was fitted to the leading edge of the fin for the anti-collision beacon, Fig. 6.

Also on the leading edge of the fin is the sensor for the stability augmentation system. I notched the fin and installed a 1/2" length of K & S 1/16" aluminum tubing and faired it flush with the leading edge. The sensor itself is a 3/4" length of steel tubing from a powdered graphite dispenser. This smaller tube fits right into the larger tube in the leading edge. This technique avoids the





Fig. 3. The busy underside of the nose. Note the grille underneath the sharkmouth. ECM pods came from Monogram's F-4C/D.



Fig. 5. The completed aft end. Note the rudder APU exhaust nozzles, hinged tail hook, and the small gauge just above the exhaust nozzle. Roger modified the exhaust shroud and added a grille.

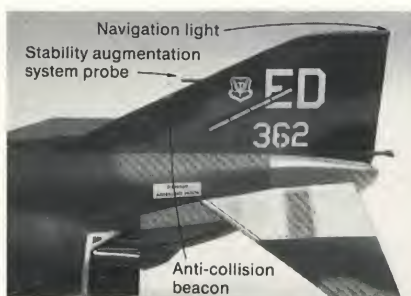
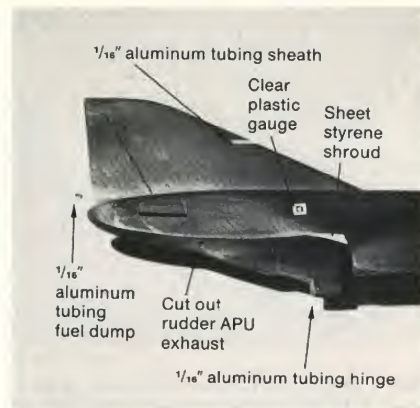


Fig. 6. A piece of red plexiglass was used for the formation light just below the probe on the leading edge of the fin. Clear plexiglass was used for the light at the tip. The probe is made from the tube of a graphite dispenser.



Bob Wheeler

Fig. 4. Added details to the aft end can be seen here before painting. Roger used aluminum tubing for many of the extras.



Fig. 7. Roger reconstructed the nose gear and added details from solder and sprue. Note the "remove before flight" tags and slightly flattened tires.

chronically weak attachment of these fragile pieces, and prevents them from breaking off, Figs. 4 and 6.

The fuel dump at the base of the rudder was scratchbuilt from various sizes of K & S tubing and brass wire. I inserted it into a notch and carefully blended it in to the proper contour, Figs. 4 and 6.

**Canopy.** The windscreen and canopy bridge sections were installed and faired in with Hot Stuff. I then polished them with Bare Metal Plastic Polish.\* The hinges on both kit-furnished canopies were incorrect, so I replaced them with new ones made from .030" sheet styrene.

After they were painted, I detailed the canopies with rearview mirrors made from plated acetate, made actuators from aluminum tubing and steel wire, and added heater-defroster cables made from tightly coiled copper wire.

**Landing gear.** The nose gear retraction jack was removed and a new one built from aluminum tubing. I used small-diameter solder for the hydraulic lines. I resculpted the drag link and

drilled lightening holes on the top and bottom sections. The nosewheel trunion mount was also reshaped for a more realistic appearance. I used the nosewheels from the Monogram kit as they have a more accurate hub, Fig. 7.

The mount for the landing and taxi lights was scratchbuilt from .010" sheet styrene, aluminum tubing, and brass wire. M. V. Products clear marker lenses were used for the lights. I used white glue to attach them since they weigh next to nothing and no real stress would be put on them. When the model was finished, I attached the gear struts, carefully aligning them so that the proper stance was assured.

**Add-ons.** The tacan blade behind the refueling receptacle and the UHF blade on the large nosewheel door are .010" strips of styrene inserted into small rectangular holes cut with an X-acto knife.

I added sway braces to the outboard pylons and small fins to the center line tank. The inboard pylons, rails for the Sidewinder missiles, ECM pods, and AIM-7 Sparrows are from the Monogram kit. Some modification was necessary to fit the pylons to the Testor

model. The AIM-9 Sidewinders are from the Monogram F-5E, Fig. 8.

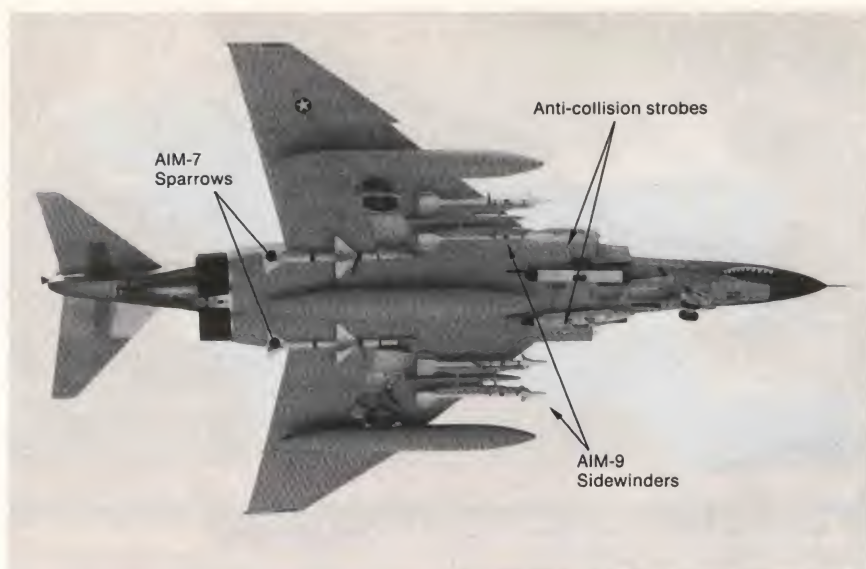
**Research found a striking color scheme.** While I was building the model, I began research for a suitable color scheme. I wanted the sharkmouth insignia and multiple MiG kills if possible. I obtained the USAF's official list of confirmed kills claimed during the Vietnam War which revealed a double kill on July 8, 1972. On that day, Captain Steve Ritchie and Captain Chuck DeBellevue downed two MiG-21s while flying an F-4E-36-MC, serial number 67-0362. A color plate of this aircraft appears in the Squadron/Signal book ... *And Kill MiGs*, by Lou Drendel. Since I had found what I was looking for, I proceeded with painting and decaling.

The entire model was sanded, polished, and inspected for flaws. This process was repeated until the surface was ready to paint. Surface detail was restored with a No. 11 X-acto blade. I used masking tape to lay out the panels and serve as a guide for the knife.

I primed the model with Testor's Flat White and used Pactra paints mixed to match FS 595a color chips for the cam-

\*Bare Metal Foil, 19419 Ingram, Livonia, MI 48152.





**Fig. 8.** The mixed air-to-air weapons load typical of missions flown over North Vietnam. The two AIM-7 Sparrows in the rear fuselage bays are radar guided while the four AIM-9 Sidewinders are heat-seeking missiles. Note the lenses of the anti-collision strobes under the intakes.

oufrage. I used Spray 'n' Plate\* on the bare-metal areas. Powdered graphite applied with a cotton swab was used to tint the various panels commonly seen on F-4s. I used Testor's Gloss Black for the radome, cannon muzzle fairing, and ranging antenna on the inboard, leading edge flap of the wings. I painted Testor's No. 1111 Blue on the fin cap and canopy rails. Next, I sprayed four coats of Micro Coat Gloss decal primer and allowed the model to dry for a week.

Decaling the model proved to be the most tedious operation of the project. There are over 850 individual decal pieces, Fig. 9. The heavily glossed finish kept silvering to a minimum. All of the decals I used are available from Microscale and Scalemaster with the exception of the stenciled names on the canopy rails which were taken from a Microscale commemorative sheet issued at the 1978 IPMS national convention in Atlanta. After all the decal work was completed I gave the model two coats of Advance Products Full Matt Finish and again set it aside to dry.

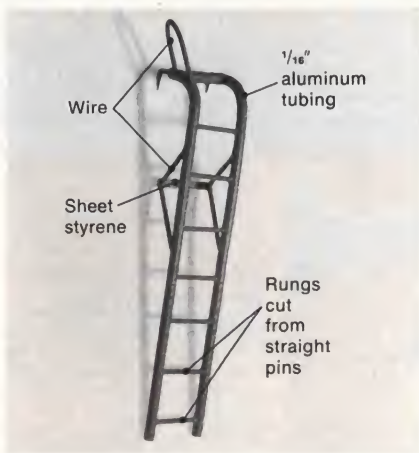
Prior to the installation of the canopies, silver Scalemaster decal stripe was used to line all of the canopy glass including the panels of the windscreen. This appears to be a complex task but it is actually quite simple. I used a set of engineer's dividers to transfer the dimensions directly from the model to the stripe sheet and then cut the stripes out with scissors. A decal setting solution helps the decals bend on the curves. The entire operation took approximately one hour.

I used Testor's Gloss White and var-

\*Advance Products, available from Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92640.



**Fig. 10.** Intake covers were made from sheet plastic with wire handles. The covers are held in place with Micro Liqui-tape for easy removal.



**Fig. 11.** Roger built the boarding ladder from aluminum tubing, straight pins, wire, and sheet plastic.

ious colors of Scalemaster decal stripes on the missiles and ECM pods. I attached these, the landing gear doors, and the fuel tanks with Hot Stuff.

**More details.** I made anti-collision strobe lights by placing clear M. V. marker lenses into depressions drilled into the bottom of the intakes, Fig. 8. I



**Fig. 9.** This shows just a small number of over 800 decals applied to this model. Even the missiles have serial numbers.



## Meet Roger Jackson

Formerly from the metropolitan Washington, D. C., area, Roger now resides in Paso Robles, California, where he is attending college. He is a veteran of the U. S. Air Force and his modeling interests include modern U. S. Air Force and U. S. Navy combat aircraft with a special interest in the aircraft of the Vietnam era. At age 31, he writes that he has been modeling for over 25 years.

Roger also enjoys the research involved with his modeling projects. "Research, research, research!" is his usual answer when asked a question concerning improving one's modeling technique. "Unless you have the real McCoy parked in your backyard to inspect, and measure at your leisure, you need more than a couple of books or magazine articles for reference."

He sends a special thanks to Bob Wheeler and Sgt. Craig Baumer of the Maryland Air National Guard and to TSgt. Frank MacSorley Jr. of the D. C. Air National Guard for their assistance with this project.

[Editor's note: Roger's right about research. While trying to come up with a photo of the real ED-362, FSM wrote to artist Lou Drendel, who painted the illustration Roger based his markings on. Lou wrote to FSM: "In 1978 I interviewed Steve Ritchie, and... firmly established that the airplane did not have a sharkmouth. If we ever update '... And Kill MiGs,' we will correct the markings error." All that notwithstanding, Roger's superb Phantom II is a striking aircraft in its own right. — Bob Hayden]





United States Air Force

**Captain Richard "Steve" Ritchie just after becoming the U. S. Air Force's first ace of the Vietnam War. Ritchie scored his other three victories in this aircraft, an F-4D.**



**Roger spent over 300 hours on this prizewinning model. Clearly, the results more than justify his extra effort to make the Phantom II truly superdetailed.**

placed another lens immediately aft of the rear cockpit for the aerial refueling floodlight, Fig. 2.

The intake covers were scratchbuilt from sheet styrene with brass wire handles, Fig. 10. I made the boarding ladder from 1/16" tubing and straight pins cut to length for the rungs, Fig. 11. The "remove before flight" flags were made by using decals from the Monogram F-15 kit applied to red-painted aluminum foil and attached with white glue. The foil allows wrinkling and creasing the flags to make them look

like their full-size canvas counterparts.

I installed the canopies with Micro Liqui-tape. This makes them easy to remove for cleaning and also minimizes damage during transit.

I put 300 hours into this project and the end result was well worth the work involved.

**FSM**

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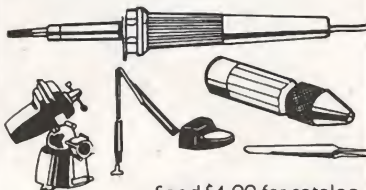
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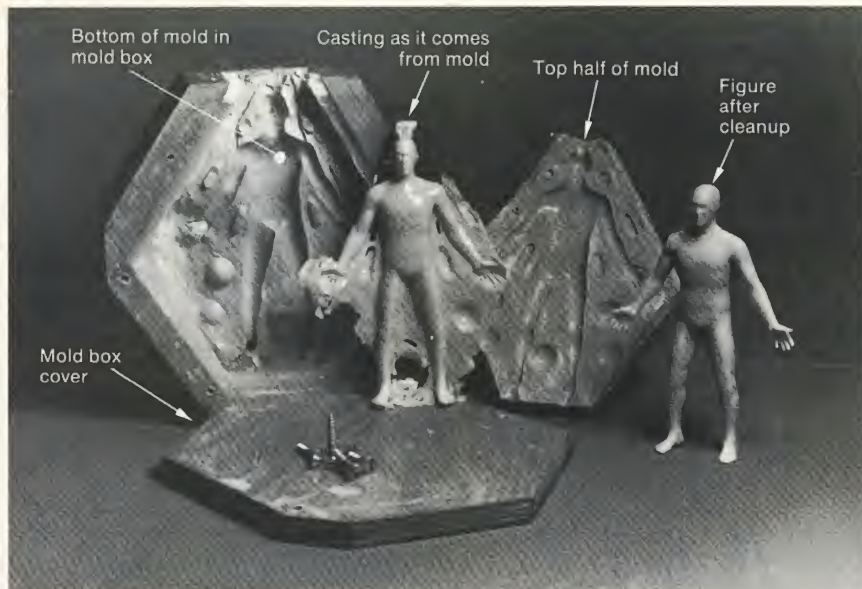
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Because his thin mold for this unclothed 1/12 scale figure distorted during casting, the author built a wood mold box and suspended the mold in it with wax.

## An easy solution to a tough casting problem

The secret weapon is paraffin wax

BY JOHN LYNN

**T**ODAY'S EXOTIC chemical compounds, among them plastic resins and RTV (room temperature vulcanizing) silicone rubbers, make home casting easier than ever before. Without using a centrifuge or elaborate vacuum equipment these relatively inexpensive materials can produce castings that rival the quality of many commercial offerings.

For several years I have enjoyed great success casting parts from a resin called Monzini Carazini in molds made



Fig. 1. The mold in the mold box, with modeling clay dams between the box and the mold at the pouring end.

from General Electric RTV 31 or RTV 700. Recently, while molding an unclothed figure to serve as the basis for a variety of original 1/12 scale military miniatures, I ran into a minor problem. The solution turned out to be simple — and a lot less expensive than making a new mold — so I'm passing the technique along here in hopes that it might help solve similar problems for other modelers.

**The problem: mold distortion.** In this case I had used RTV 700, which is softer and more flexible than RTV 31, to make a two-part mold. The mold leaked badly at the joint between the mold halves, and when I pressed the halves together with enough force to stop the resin from seeping out, the mold compressed and collapsed and the resulting casting was badly distorted — it looked more like a skeleton than a robust soldier.

I could have poured a new, thicker mold from the stiffer RTV 31, but doing so would have been time-consuming (and expensive, RTV costs about \$20.00 a pound). The only way to derive acceptable castings from the existing mold was to work out a way to hold the halves together and seal the seam between them without using pressure. Resolved to make the best of a bad situation, I finally found a way to make



Figs. 2 and 3. After dripping melted paraffin along the seam of the mold (top) the mold is placed in the mold box and paraffin is poured into the space between the mold and the sides of the box (above).

perfect, undistorted castings from the troublesome mold.

**The solution: suspending the mold in wax.** I first constructed a hexagonal mold box with a cavity approximately  $\frac{1}{16}$ " less deep than the thickness of the assembled mold and wide enough to leave  $\frac{1}{2}$ " to  $\frac{3}{4}$ " clearance between the sides and the edges of the mold, Fig. 1. The box is made from scraps of lumber with a plywood top and bottom. Six screws fasten the top to the rest of the box, making it removable, and one end of the box is left open for pouring the casting resin into the mold.

To prepare the mold for casting I sealed the seam between the halves by dripping melted paraffin wax (you'll find it in a crafts store with the candle-making materials, or in the canning supplies section of your supermarket) along the crack, Fig. 2. Next I placed the mold in the mold box and blocked the spaces between the mold and the wood at the pouring end with modeling clay, Fig. 1. Then I poured hot paraffin all around the mold while pressing down lightly on the top half to make sure the halves were aligned correctly and that no wax flowed into the mold cavity, Fig. 3.

After the wax solidified I trimmed away the excess with a knife so the top of the mold box would fit snugly, Fig. 4.





The paraffin holds the two halves of the mold in proper alignment and effectively seals the seam between them without the need for any pressure. However, I found I could not rely on the wax alone to keep the halves of the mold from separating; I had to screw on the top of the mold box to hold the mold halves together, Fig. 5. (When I tried making a casting without the top the resin forced the mold apart, leaving me with a terrible mess.)

Once the mold and mold box are set up you can make several castings without having to redo the wax seal. Remove the screws, lift off the mold box cover, and carefully remove only the top half of the mold to take out the cured casting, then replace the mold half, screw down the box top, and pour again.

The technique of suspending a mold in wax can also be applied to damaged molds or to irregularly shaped molds which would be awkward to clamp together. Having this simple trick up your sleeve may mean you'll be able to derive usable castings from molds that you'd otherwise have to discard. **FSM**

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Monzini Carazini Liquid Casting Compound (\$12.50 per gallon, plus shipping)

Adhesive Products Corporation  
16660 Boone Avenue  
Bronx, NY 10460

General Electric RTV 31 and RTV 700 rubbers (\$22.00 per 1-pound kit)  
General Electric Silicones  
RR 4, Waterford, NY 12188

(Will provide name and address of your local General Electric Silicones distributor. Upon request, your local distributor will send a copy of General Electric publication S-45A, "The Moldmakers.")

**Figs. 4 and 5. (Above)** After the wax around the mold cools and hardens excess wax must be trimmed away so the mold box cover will fit. **(Below)** Pouring Monzini casting resin into the assembled mold and mold box.



**A finished 1/12 scale revolutionary soldier of the French 49th Regiment, 1791, built from the unclothed figure casting. After repositioning the limbs on the torso the figure was clothed and painted.**

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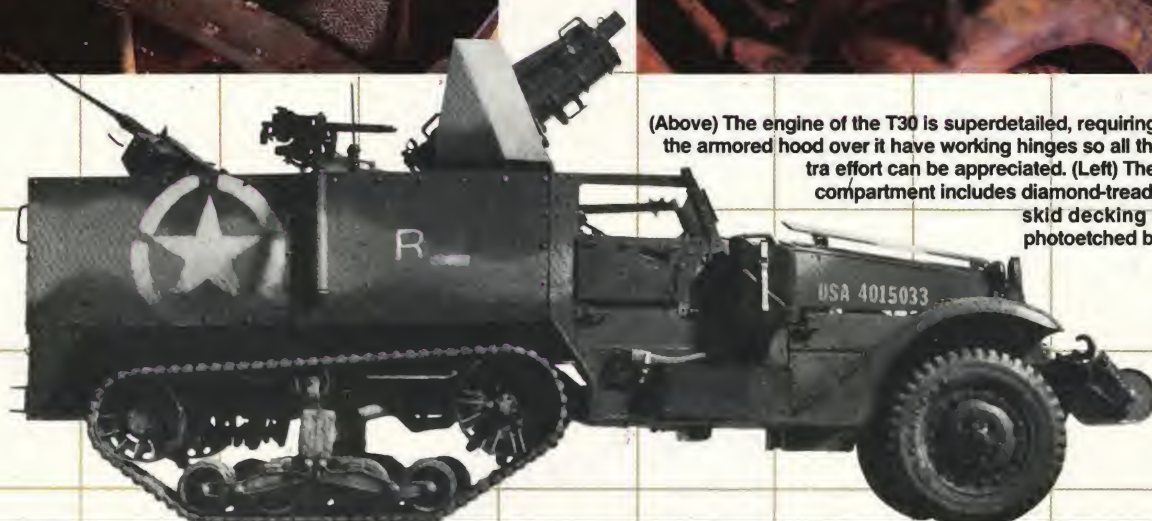
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(Above) The engine of the T30 is superdetailed, requiring that the armored hood over it have working hinges so all the extra effort can be appreciated. (Left) The gun compartment includes diamond-tread anti-skid decking from photoetched brass.

## Superdetailing armor models

Three techniques that may be new to you,  
including how to use photoetched metal parts

The author's 1/35 scale T30 75 mm howitzer motor carriage is a conversion based on Tamiya's M3 half-track. The model includes photoetched brass parts, scale working hinges, and rivets made using the techniques in this article.





**A** MAJOR PROBLEM in advanced armor modeling, whether you're working on extensive kit conversions or scratchbuilt vehicles with some kit parts, is detailing the home-fabricated sections of your model to match the finely detailed appearance of the kit portions. Let's face it, Italeri, Tamiya, and some of the other manufacturers are no slouches when it comes to surface detail on their armor kits, and it's always a challenge to make sure no one can tell where their efforts end and your own begin.

I ran into this kind of detailing problem while working on a 1/35 scale T30 75 mm howitzer motor carriage conversion based on the Tamiya M3 half-track. Instead of covering the entire conversion, this article will describe the techniques used to overcome the problems, which were developing finer drive sprockets and idler wheels, making working scale hinges, and finding a way to mass-produce convincing rivets.

**Using photoetched brass parts.** One feature of the Tamiya M3 half-track kit that has always bothered me is the relative crudity of the drive sprocket and idler wheels compared to the rest of the kit. On the real vehicle, Fig. 1, these wheels are extremely delicate and complex, and molding them exactly to scale would be next to impossible. I had considered various ways to correct the kit wheels, but could not find a satisfactory method until I learned of photo-etching.

Railroad modelers and aircraft modelers have been using photoetching techniques for years to fabricate small, delicate pieces that would be difficult or impossible to make using sheet styrene, and to make many identical small parts. Many of these parts are available commercially, such as the brass locomotive cooling fan grilles from Detail Associates (which are handy for armor modeling), and the tiny seat belt buckles produced by Waldron for aircraft modelers.

It's also possible to have photoetched parts made to order. Fotocut, Box 120, Erieville, NY 13061, is run by Fred Hultberg, who specializes in providing custom photoetching services to modelers. Any modeler who can provide Fotocut with finished, flat artwork of the parts he needs can have the parts made in brass. The process is by no means inexpensive — prices vary depending upon the thickness and overall size of the parts, and on the number to be made — but to my way of thinking the service is not overpriced.

#### Preparing artwork for photoetching.

The first step in having photoetched parts made is drawing accurate artwork. Whatever is black on the artwork will be reproduced in brass; what-



Fig. 1. A close-up of an M3 half-track suspension, showing the intricacy of the suspension elements, especially the drive sprocket (left) and idler wheel (right).

ever is not black will be eaten away during etching. Anyone who is thinking of photoetching his own parts should purchase a copy of Fotocut's pamphlet, "Drawings for Photo-Etching" (\$4.00), which is a comprehensive explanation of the requirements for suitable artwork.

The artwork must be done in black ink, and must be extremely sharp and clean, which means using a quality technical drafting pen such as a Castell TG or Rapidograph. I use a Castell

TGH with a No. 0 or 00 tip depending on how fine the lines in the artwork must be. It is also important to draw on a quality, hard-surfaced illustration board or technical tracing paper so that the ink doesn't bleed or blot. Finally, you must use opaque black ink. I use Pelikan No. 50 Black-Special, but there are several other good inks formulated for technical pens. I prepare the artwork in rough pencil form first to check dimensions and such, then make a final clean inking.

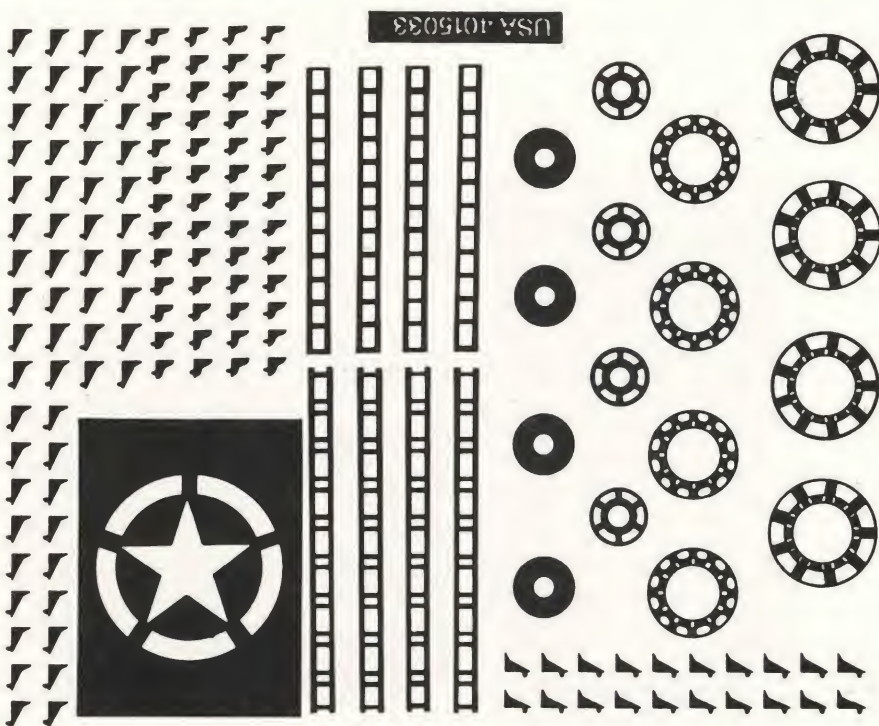


Fig. 2. This is the artwork for 1/35 scale half-track idler and drive sprocket wheels. Steve's original drawings were twice this size, but the artwork is reproduced here the actual size of the parts. The star with circle segments and the serial number are stencils for painting markings on the model.





FINESCALE MODELER: Paul Erler

**Fig. 3.** Clockwise from left, profile-etched parts (these are 1/87 scale lobster traps) on their vinyl backing sheet, a part about to be soaked in lacquer thinner to remove the backing, and a part after removal, with the softened backing behind it.

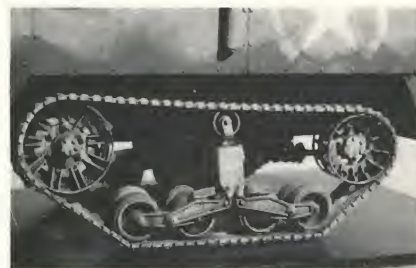
There are several tricks in preparing the drawings, and the most important one is to make your original drawings larger than the final size of the parts. I usually draw twice final size, but Fred Hultberg recommends four times final size as easier and still practical. When I send the artwork to Fotocut I annotate it to show how much bigger it is than the final size, and Fred reduces the drawing photographically when he prepares the negative. If you have to make dozens of identical parts and don't want to draw them dozens of times, draw one, find a photocopy machine that gives clean, black copies, and paste the copies down on your artwork.

Two warnings about preparing art-

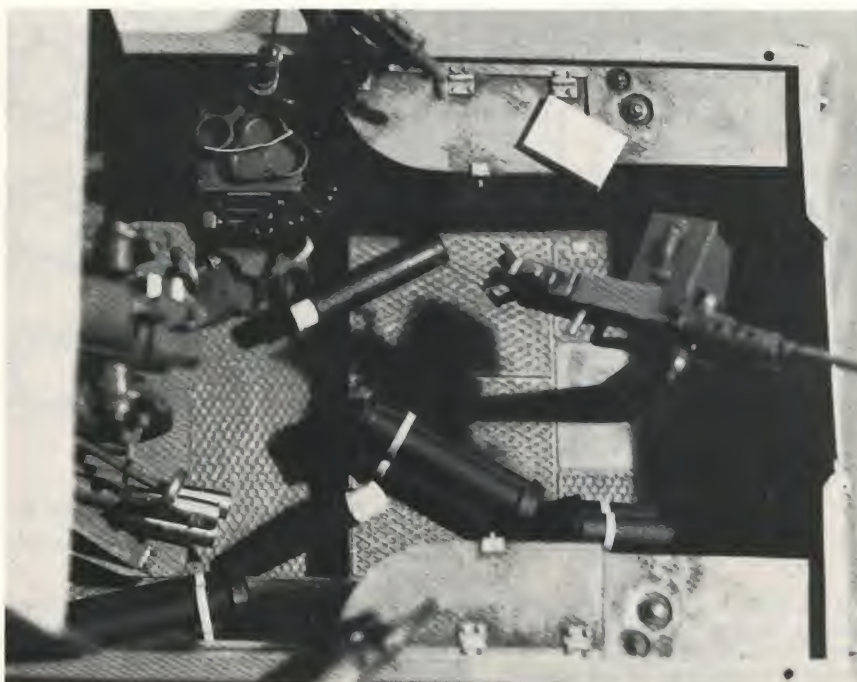
work: Don't pack the pieces in too close to one another, and be realistic about what level of detail the technique can manage. As you can see from the parts illustrated here, the capabilities of the photoetching are pretty marvelous, but there is a limit.

Figure 2 is the artwork for the half-track idler and drive sprocket. Note how each pattern is repeated at least four times, because the model requires two of each idler and drive sprocket, each of which consists of an inside and outside half. Each half consists of circular center plates, outer rims, and many small reinforcing ribs. Note that each rib has a small tab that plugs into a slot in the circular center plate.

**How photoetching works.** At Foto-



**Figs. 4 and 5.** (Top) The assembled photo-etched sprocket and idler wheel halves and their counterparts from the original kit. (Above) A close-up of the completed half-track suspension. The track on the model was scratchbuilt and the other suspension elements thinned down for better appearance.



**Figs. 6 and 7.** (Left) The diamond-tread decking in the gun compartment of the T30 was made by partially etching .010" brass. (Above) The artwork for the diamond-tread parts and the nameplate for the model, reproduced here at full size for 1/35 scale.





**Figs. 8 and 10.** The engine deck, opened (left) and closed (right), with its scale-size working brass hinges. Also note the rivets on

the hood panels, which were made using the author's "salami slicing" technique.

cut, Fred makes a Mylar negative of the artwork to the final size, then contact-prints the negative against sheet brass that has been coated with a photosensitive acid-resistant coating. After exposure and developing, only those areas that are to become parts (the black portions on the original drawings) remain coated with the acid resist. The brass is then treated with acid, which eats away everything except the areas coated with the resist.

Six thicknesses of brass from .002" to .008" are available for profile parts (those that are etched clear through, separating them from the sheet). Considerably thicker sheets, from .010" up to .020", are available for partial etching to produce raised or indented detail or two-sided etching for detail on both sides of parts. For the sprocket and idler wheels I used .008" brass. Although this is thinner than the thinnest commonly available plastic (.010"), brass is so much stronger than plastic that you need not fear inadvertently bending or breaking the parts.

**Using the finished parts.** The parts come from Fotocut attached to a vinyl backing material, Fig. 3. Remove the parts from the backing by soaking them in lacquer thinner or Floquil Diosol, which quickly dissolves the bonding agent. Occasionally there is a little gunk left on the parts; Testors liquid cement cleans this off easily.

The parts can be glued together using epoxy or one of the cyanoacrylate glues. Figure 4 compares the finished photoetched brass wheels to the original kit wheels, and the difference is dramatic. On the model, Fig. 5, the lacy look of the sprocket and idler wheels is exactly what I was after. Incidentally, I have made these particular parts available through a commercial source so it is not necessary for you to prepare new artwork to obtain a set of wheels for your half-track project.\*

Profile etching is most useful for armor modelers, but it is also possible to

partial etch. In partial etching the acid does not eat all the way through to the vinyl backing, but is chemically stopped, leaving a brass sheet with detail etched into it (or raised, as in the case of rivets). On my T30 conversion I needed a diamond antiskid pattern on the floor of the gun compartment, Fig. 6. I prepared artwork, Fig. 7, and had Fotocut prepare a partially etched floor. The cost, including negative charges, was about \$15.00.

The disadvantage of partial etching is that the finished parts must be cut away from the rest of the brass sheet using a razor saw. While I could have used profile etching to make the diamond pattern on the floor, I felt that gluing the intricate screening pattern to a solid floor would have been more difficult than cutting out the solid piece with the pattern etched into it. I have also used partial etching to make intricate display bases and title plaques, including the label plate for the T30 shown in Fig. 7.

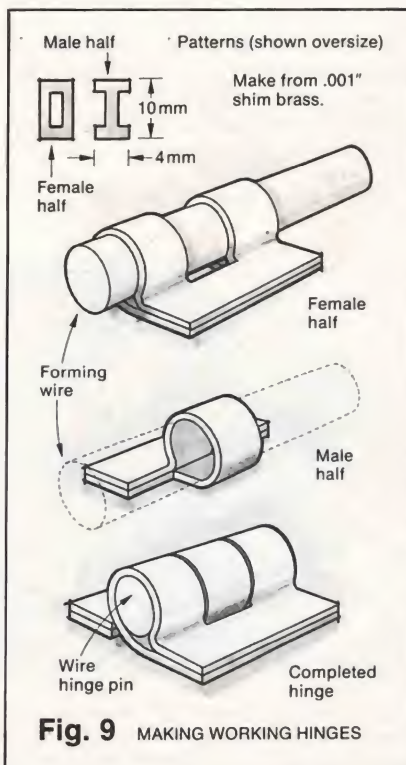
As I mentioned earlier, photoetching is not inexpensive, and in many cases (including my T30) the cost of photoetched parts far exceeds the cost of the rest of the model. That means photoetching is probably not for everybody. However, the technique allows you to fabricate very intricate parts and attain a high level of detail not possible using conventional techniques. Besides the wheels and flooring shown here, other armor details that can be made include screening, track links, track shoe guide horns, wheel detail, and even spoked wheels for 1/35 scale motorcycles and bicycles.

**Making scale working hinges.** While researching the T30 conversion I came

across a lot of detailed reference material on the half-track engine. I became determined to add an engine to my model, but doing so would mean that I would have to make a working hood so the engine could be seen. The vehicle has a conventional armored hood with four folding panels — and no less than 12 hinges, Fig. 8.

I wracked my brain trying to dream up a trick for making working hinges with a scale appearance. Finally, the obvious occurred to me: It might be possible to make hinges out of very thin shim brass sheet in much the same manner that actual hinges are made. I found a 6" x 12" sheet of Sig\*\* .001"

\*\*Sig Manufacturing Co., Montezuma, IA 50171.



**Fig. 9** MAKING WORKING HINGES

\*David Reed, 13407 Wales Creek Road, South Wales, NY 14139. Prices are \$13.48 for .005" sheet, \$18.90 for .008" sheet etched from two sides (recommended). Add sales tax if you are a New York resident. Several other sheets, including aircraft, ship, and diorama parts, are available from the same source.



shim brass (enough to make an awful lot of hinges!) at a railroad model shop.

After a good deal of trial and error I came up with shapes for the male and female hinge halves, Fig. 9. Each part is bent around a forming wire and the flaps glued together with super glue. It's a good idea to lightly oil the forming wire so it remains free. Once the forming wire is removed the male and female halves can be assembled with a wire hinge pin.

I should warn you that making these hinges takes a great deal of patience, and that they are very fragile and easy to damage. But they work quite well, Fig. 10, and this is the only method I have found to make hinges that are not grossly overscale.

**Making scale rivet heads.** Just as ship and biplane modelers are plagued with rigging (it's hard to build, but the model looks strange without it), rivets are the curse of the armor modeler. Before going into three techniques that I use to make scale rivet heads, I'll describe three that, although widely used, produce unacceptable results.

One unsatisfactory method is to impress rivet detail through a sheet of .010" plastic using a pin. This leaves a little bump on the other side which is supposed to represent a rivet head; it always looks more like a pimple to me. Another method is to use small globs of white glue to form rivet heads, or to glue grains of salt or some other substance to the surface using white glue, neither very convincing.

The third unconvincing technique involves using a heat-sensitive plastic fiber which, when exposed to heat, shrinks to form a round, lens-shaped head. The idea is to drill a hole, put a piece of the fiber in it, hold a heat source near the protruding fiber, and "voila!" — a rivet head. This technique results in nonuniform, oversize rivet heads, often with an unrealistic undercut around the base.

**Three rivet techniques that work.**



Fig. 11. This scratchbuilt 1/76 scale char B1 bis tank includes dozens of salami-sliced rivets. You can't tell it from this photo, but the model comes apart to show off its complete interior!

The simplest way to make effective rivets is to slice them off the surface of an M3 Lee/Grant kit with a sharp razor blade and reattach them to your model with liquid cement. This technique produces excellent results even if it does leave your hobby den littered with the picked-over carcasses of old M3 kits.

I call the next technique "salami slicing." This is best for small rivets, such as those on 1/76 scale tanks, Fig. 11, although it certainly can be used on 1/35 armor, Figs. 12 and 13. The technique involves slicing tiny round slabs from stretched sprue. This probably sounds about as hair-raising as inscribing your name on the head of a pin, but there are several tricks and shortcuts that make it relatively easy.

To begin with, pay attention to the plastic you use to make the stretched sprue. Some firms use brittle plastic in their kits. If you try to use such plastic for salami-sliced rivets you'll find it hard to cut cleanly — it may even fracture into microscopic slivers instead of making a disc. The softer and more pliable the plastic is, the better; Monogram and Tamiya kits are usually safe

bets. One way to test for pliability is to bend a length of the sprue: If it snaps before being bent perpendicular to itself, it's too brittle. Good sprue often has to be bent repeatedly before it breaks.

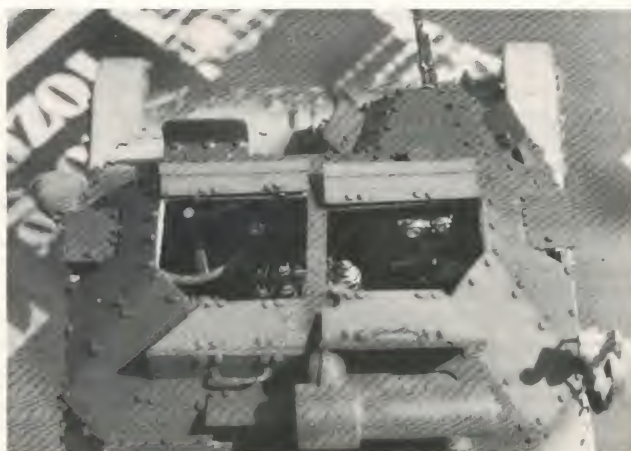
Obviously, it's ludicrous to slice off one rivet at a time. Attach a strip of masking tape to your work surface, sticky side up, then line up a dozen pieces of round stretched sprue like a miniature log raft, Fig. 14. Then, using a very sharp razor blade (that means brand new), you can cut off a dozen rivet heads at a time, thereby ensuring uniform thickness.

Why not just use double-faced tape instead of masking tape? The reason is that the real trick to salami-slicing rivets is not cutting the rivets, but getting them off the tape afterwards! The best method I've found is to remove the tape, rivets and all, and drop it into a small jar of denatured alcohol. This will dissolve the tape adhesive, leaving you with a nice little heap of scale rivet heads. Then the fun begins.

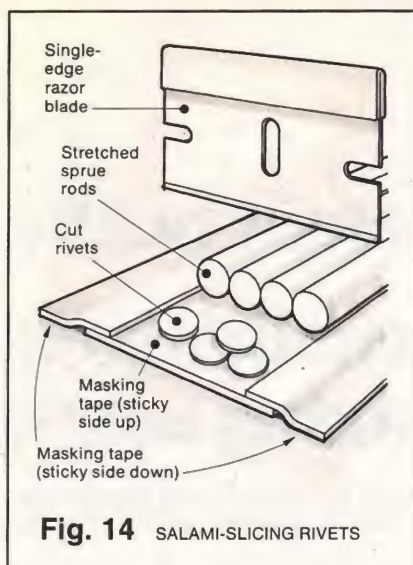
Out-of-line rivets are worse than none at all, so use a ruler and drafting



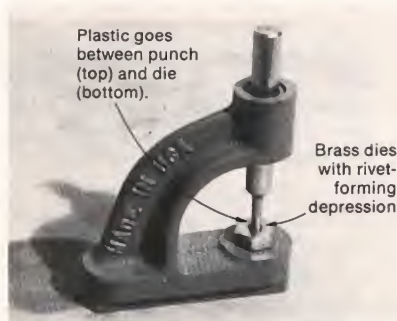
Figs. 12 and 13. This TKS scout tank used by the Polish Army in 1939 is tiny even in 1/35 scale. The model is scratchbuilt, has a full interior, and is encrusted with over 100 salami-sliced rivets.







**Fig. 14** SALAMI-SLICING RIVETS

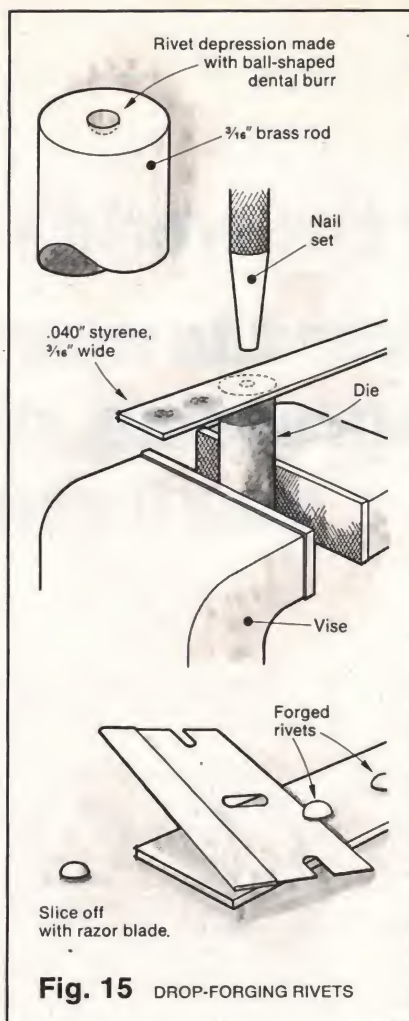


**Fig. 16.** This improvised press for drop-forging rivets was made from an inexpensive tool intended for setting grommets.

pencil to draw a light guide line where the rivets will be placed. Put a fresh No. 11 blade in your modeling knife and use its point to pick up individual rivets. Put a tiny drop of liquid cement where one rivet head will go and quickly position the rivet with the knife blade. It's important that you use just the right amount of cement: too little will dry too fast and the rivet will not adhere; too much will melt the tiny rivet head into an unsightly blob.

**Drop-forged rivets.** The last rivet technique yields the best results, but is also the most demanding and time-consuming. This "drop-forging" technique was developed by Karl Rosenlof, one of the most meticulous tank modelers I know. The essential first step is to make a brass die, Fig. 15. This is a piece of  $\frac{3}{16}$ " brass rod with one end carefully filed flat. Using a motor tool and a fine ball-shaped dental burr, carve a small semicircular depression in the center of the end. The depression should be exactly the size of the rivets you want, maybe just a tad deeper.

To forge rivets the die is held in a vise with the depression facing upward. Hold a piece of .040" styrene over the die, place a nail set over the depres-



**Fig. 15** DROP-FORGING RIVETS

sion, and strike the nail set with a small hammer. The hammer blow will force the plastic into the depression, making a rivet head which can then be sliced off and added to your model. I usually cut the .040" styrene into  $\frac{3}{16}$ "-wide strips to make it easier to reach the individual rivets with a single-edge razor blade.

The main advantages of drop-forging are that you don't have to carve up expensive M3 Grant kits and you can produce any size rivet you want by making different dies. It's even possible to make several depressions in the die so you create several rivet heads for each hammer strike. The disadvantages are that this method is time-consuming, and that you'll eventually wind up smashing your fingers with the hammer.

To make drop-forging a little easier, check tool catalogs for the small tools used to set grommets. Such tools, Fig. 16, can be readily converted into simple drop presses to hold the punch and die and ensure that the plastic is struck immediately above the mold depression. Best of all, the grommet tool helps keep your fingers out of the path of the hammer!

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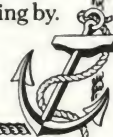
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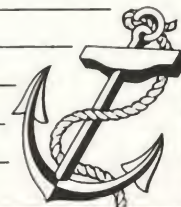
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Bob's 1/48 scale Monogram P-39F Airacobra. Note how light reflects off the acetate instrument faces. Bob has the "car door"

windows cranked halfway down. Also visible is the throttle quadrant and the ring sight above the instrument panel.

# Detailing aircraft cockpits

The main ingredients are tiny pieces and a bit of time

BY BOB STEINBRUNN

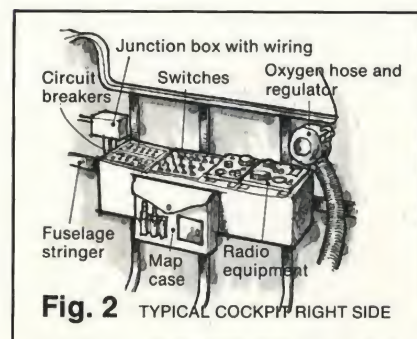
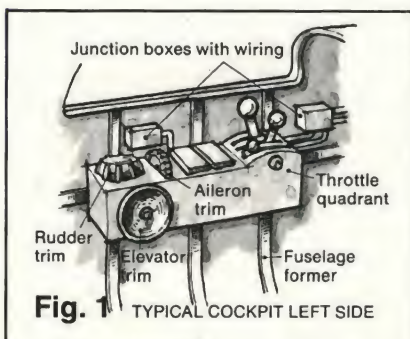
**I**FLY FOR A LIVING, so detailing the cockpit of a model is of more than average interest to me. The key to adding cockpit detail is *time* — not fantastic ability, the soul of an artist, or the hands of a watchmaker, as you may have heard. Just time.

It's all too easy to look at a photo of a real cockpit and be overwhelmed by the complexity of it all. But in detailing model aircraft cockpits, it is best to concentrate on one area at a time, finish it, and move on. I've been so frustrated by working on one thing and worrying about another that it ceased to be *fun*, and after all, fun is what modeling is all about. So instead of giving up and cementing the canopy closed, put your blinders on and work on it one step at a time.

Although I build mostly 1/48 scale World War Two aircraft, the tips in

this article can be applied to jets and to other scales. I like detailing cockpits in 1/48 scale: 1/72 scale seems to me to be awfully small for this kind of treatment, but I've seen it done well. Detailing in 1/32 scale almost requires a miniature manufacturer's data plate to look right. I don't have to go overboard on the time factor cobbling up details in 1/48 scale.

If you haven't tried your hand at cockpit detailing, now is the time to select a kit worthy of your effort, and arm yourself with as many cockpit photos as you can. Before you get too far into the research, settle on a particular variant of the aircraft. It is surprising how many changes are made in instrument panels and cockpits among variants of the same type of aircraft. Some





typical examples are the differences between the F6F-3 and -5 Hellcat instrument panels, or the changes in the USAF, USMC, and Navy versions of the OV-10A Bronco. Once you have decided which version you'll build, cover your workbench with cockpit photos, plans, and drawings.

**Starting out.** Typically, WWII fighter cockpits had the trim wheels and the throttle control, or quadrant, on the left console or attached to the left fuselage interior structure. The radio controls, circuit breakers, and oxygen regulator with hose were usually found on the right side, Figs. 1 and 2. Of course these rules are not hard and fast, so always check reference photos for the plane you are modeling.

For easy access, cockpit detailing is best done before the fuselage halves are glued together. I start with the fuselage sides, grinding away any shallow kit detailing and mold marks with a Dremel Tool and burr. Next, I add fuselage formers and stringers with Plastruc\* shapes and Evergreen strip styrene.\*\* It's a good idea to periodically check the fit of the cockpit tub or seat assemblies to make sure that the added detail allows adequate clearance.

I use .010" sheet styrene and wire or stretched sprue to simulate junction boxes and cables visible in the reference photos, and build up the consoles with sheet styrene. Throttle quadrants can be made from sheet styrene, Fig. 3. A visit to a model railroad shop can reward you with tiny photoetched brake wheels that make excellent trim wheels and landing gear cranks, Fig. 4. Small parts made for HO model railroads can be used for throttle, mixture, prop pitch, and supercharger levers, Fig. 5.

I make oxygen hoses by wrapping thin motor armature wire around thicker wire in a loose spiral, coating the resulting coil with a liquid masking agent, and painting when dry, Fig. 6.

\*Plastruc, 1161 Monterey Pass Road, Monterey Park, CA 91754.

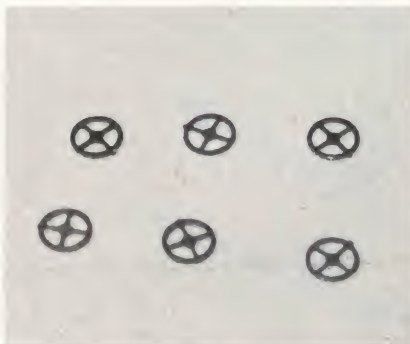
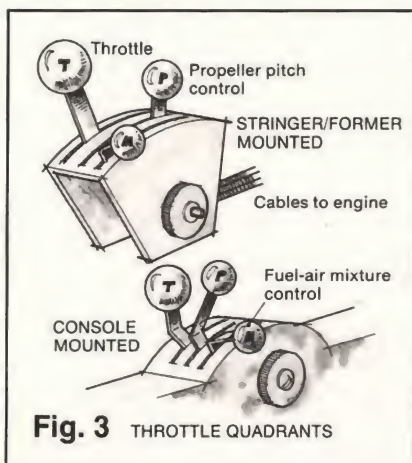
\*\*Evergreen Scale Models, Bellevue, WA 98005.



The cockpit in this Otaki 1/48 scale Bf 109G-6 is almost entirely scratchbuilt. Note the yellow fuel line on the right side of the cockpit. Bob vacuum-formed and opened the canopy so the interior detail is easier to see.



Monogram's 1/48 scale P-47D Thunderbolt "Miss Behave" has received the cockpit detailing treatment. Note the added rearview mirror, ring and reflector gunsights, and rudder pedals.

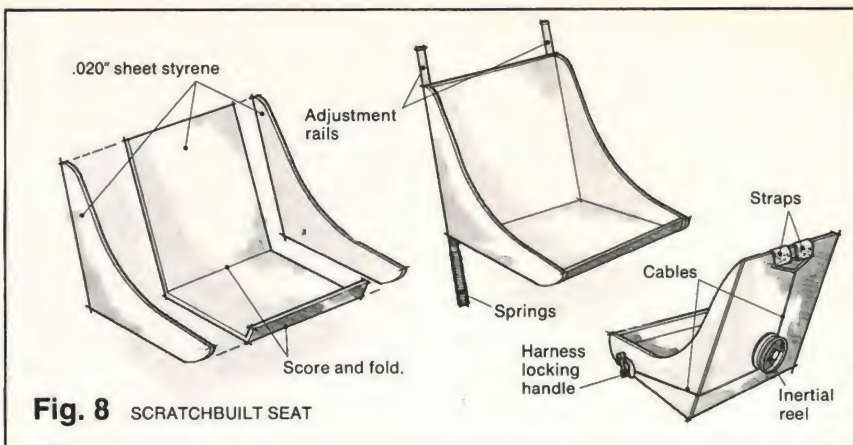


Figs. 4 and 5. (Left) Photoetched brass model railroad brake wheels make realistic trim and landing gear crank wheels. (Right) Tiny injection-molded styrene eyebolts can be used as levers on throttle quadrants and other cockpit controls. These can be found in model railroad shops.

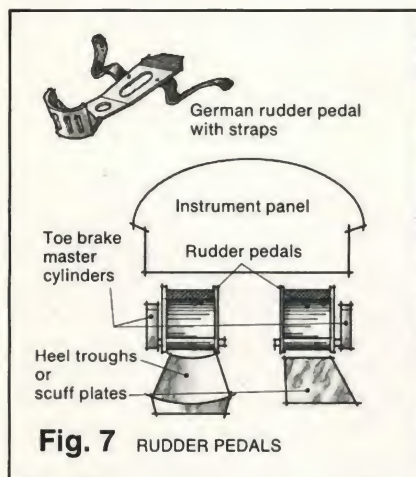




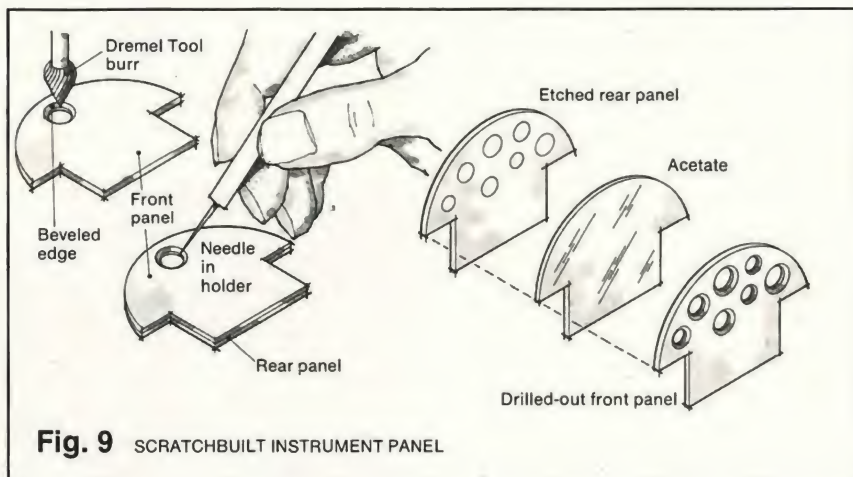
**Fig. 6** OXYGEN HOSE



**Fig. 8** SCRATCHBUILT SEAT



**Fig. 7** RUDDER PEDALS



**Fig. 9** SCRATCHBUILT INSTRUMENT PANEL

Then I bend it to shape, paint a fitting on one end, and attach the other to the regulator made of a disc of sprue.

**Floor and rudder pedals.** Some aircraft actually had no floor at all (for example, Wildcats and early Corsairs), just a seat attached to an armored bulkhead with two troughs leading up to the rudder pedals. This arrangement

can be made using Plastruct "I" beams attached to fore and aft cockpit bulkheads.

I make rudder pedals from sheet styrene cut to the appropriate shape and suspended on stretched sprue rods. Many U. S. aircraft had toe-operated main wheel brakes with master cylinders attached to the sides of the pedals.

The brakes were activated by pivoting the rudder pedals; the cylinders can be represented by using sections of sprue, Fig. 7. German rudder pedals had leather straps which can be simulated with masking tape.

**Seats.** Kit-supplied seats are sometimes usable, but a seat scratchbuilt from .020" sheet styrene looks better. I build the basic seat in three sections which then can be shaped or rounded into the particular seat desired, Fig. 8.

Some seats have height adjustment rails with springs which can be made of wire and Walther's\* No. 945-3005 HO railroad coil springs. The seat belts, harness, and other straps can be made from your favorite tape, and a set of Waldron\*\* or Unique Scale\*\*\* buckles, although expensive, really dress up the cockpit.

U. S. aircraft featured a shoulder harness that went over the back of the seat, where the two straps joined together in a metal fitting. The fitting was attached to a cable which ran down



**Fig. 10.** Painting small parts such as instrument panels, oxygen bottles, seats, and sticks is easy when they are attached to sprues with a small drop of liquid cement.

\*William K. Walthers, Inc., 5601 West Florist Avenue, Milwaukee, WI 53218.

\*\*Waldron Model Products, 1358 Stephen Way, San Jose, CA 95129.

\*\*\*Unique Scale Hobbies, 1178 Boston Road, Springfield, MA 01119.



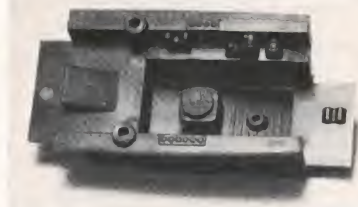


**Step 1.** Superdetailing a cockpit is not difficult if you take it one step at a time. Let's take Hasegawa's 1/48 scale Kyusho J7W1 Shinden and start by setting up reference material in a convenient location. This leaves your hands free to work on the model.

**Step 3.** Strip styrene and sprue simulate the cockpit side wall structure. The fuselage halves will be assembled after installation of the cockpit tub. The large white areas to the rear of the cockpit are sheet styrene that blocks off the intakes on the fuselage sides.



**Step 4.** (Left) The completed cockpit tub before painting. Note the "I" beam foot troughs, and the sheet styrene radio with sprue knobs. (Right) The scratchbuilt throttle quadrant and other controls applied to the left side of the cockpit tub.



**Step 2.** This is the kit cockpit tub before modification. The sidewalls and floor will be cut away and replaced with more realistic structures. The sockets for the rear brace will also be trimmed away.



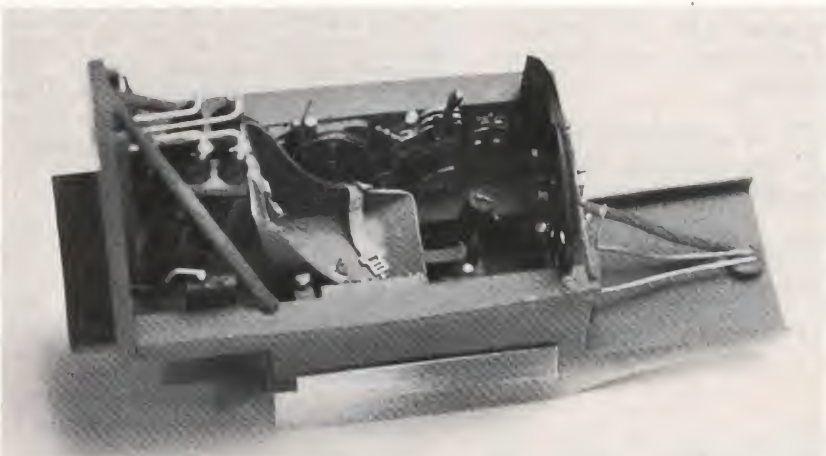
**Step 5.** Here's the kit seat (left) beside the finished scratchbuilt replacement. Note the masking tape harness and seat belts. Unique Scale brass belt buckles add realism.

Kit panel



Three-piece panel

**Step 6.** Compare the kit instrument panel with its scratchbuilt counterpart. Note the added relief from the beveled edges and etched detail on the instrument faces.



**Step 7.** The completed cockpit tub after painting. The instrument panel, stick, and seat have been installed, and the tub is ready to be mounted in the fuselage.



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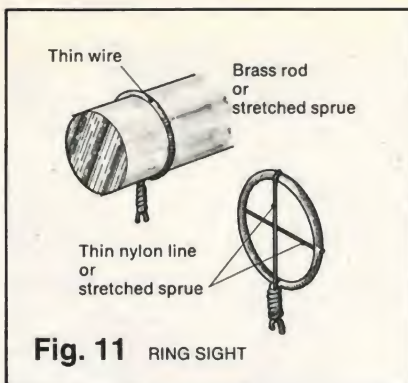


Fig. 11 RING SIGHT



Fig. 12. Technical pens can draw fine lines for miniature cockpit placards. Here is a tiny sheet styrene placard which will be attached to the sidewall of a cockpit tub.

to an inertial reel on the back of the seat. From there another cable ran to the harness locking handle on the left side of the seat pan.

**Instrument panels made easy.** The instrument panel is the main ingredient of a detailed cockpit, one of the few items on a model where a little effort yields a big dividend. Although the finished product looks difficult to make, I think it's the easiest part of the cockpit.

Start with a paper template that is roughly the shape of the actual panel, and fit it to the fuselage halves by trial and error. Use the template as a pattern to cut two blank panels from .010" white sheet styrene, and a third from clear acetate, Fig. 9. Drill out holes for the instruments in one of the styrene panels with a Dremel Tool No. 118 burr. I use this instead of a drill because the burr bevels the edges of the holes for a more realistic appearance.

Next, paint both styrene panels flat black. Attach these and other small parts to sprues to make them easier to paint, Fig. 10. Using the front panel as a template, use a needle to scratch through the black paint of the rear panel. I first etch a circle around each instrument, and then etch in the instrument markings.

Next, sandwich the clear acetate between the two styrene panels, and carefully apply white glue around the edges. The clear acetate simulates the glass faces of the instruments. This extra touch looks especially nice when light reflects off the instruments. After



## Meet Bob Steinbrunn

Bob is a former U. S. Army helicopter pilot with Vietnam combat time in both UH-1 "Hueys" and AH-1 "Cobras." He currently flies helicopters for a Minneapolis-based corporation. He has been a member of IPMS chapters in Dallas and Philadelphia, and is now an active member in the Twin Cities Aero Historians. His favorite modeling subjects are 1/48 scale WWII aircraft and he has won many awards at regional and national IPMS conventions.

the panel is dry, add any additional lettering, placards, switches, and knobs.

Gunsight reflectors can also be made from acetate. If the particular aircraft you are modeling had a ring-and-bead sight, wrap armature wire around a suitable piece of brass tubing or sprue, twist it, and remove the tube, Fig. 11. Crosshairs can be made from small-diameter nylon thread or fine stretched sprue. Glue the sight to the cockpit coaming before attaching the windscreen.

**Finishing.** After all the subassemblies are constructed, paint the cockpit its main color, then paint the details. Add stenciling and placards by painting red, black, or white rectangles and then adding the writing in a contrasting color. A technical drafting pen, such as a Koh-i-noor Rapidograph, is excellent for these as well as for making stencils, Fig. 12. They have an ink reservoir and a hollow, needle-like point that draws a fine line. The pens have interchangeable tips of various widths and are available from artist's supply stores. Inks come in many colors, but I find black, white, and red to be most useful.

If the aircraft you are modeling has a sliding canopy, glue two pieces of sprue along the fuselage sides for canopy tracks. When the cockpit is finished and the fuselage is assembled, cover the cockpit with a paper hood and seal the edges with liquid masker. This mask is easily removed after the model is painted.

Finally, I think it's better to add too much detail, even if you don't think it will show once the model is assembled. It's always more difficult to add details after the model is finished.

There, wasn't that easy? And all it took was time!

FSM





All photos, FINESCALE MODELER: A. L. Schmidt

(Top) This boxed diorama based on a 90 mm figure illustrates the principle of not modeling details that won't be seen. The front-surface mirror (at the right edge of this photo) almost

doubles the apparent size of the scene. (Bottom left) It's going to be mighty hard for Sam to play it again on this piano! Because it would never be seen there was no need to model the keyboard.



## Modeling Rick's Café Americain, Casablanca, 1941

You must remember this . . .

BY RICHARD SMITH

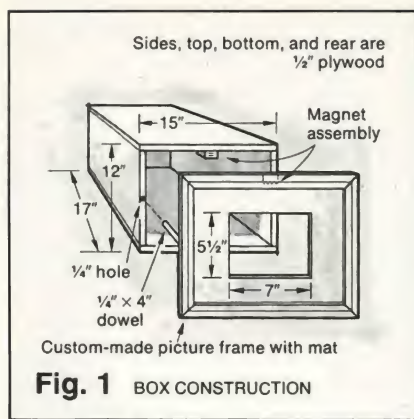
**A**FTER PROMISING to build a scene from *Casablanca* for a fellow hardcore fan of the movie, it began to dawn on me how difficult the task would be. How could I re-create the atmosphere of a classic motion picture in a static piece with a single 90 mm figure? How

would I keep it from looking toylike? And how was I going to include all the rich detail that helped establish the intense mood of intrigue at Rick's Café Americain in North Africa in 1941? Just as the people at Warner Brothers didn't know how the movie was going to end when they began shooting it, I had no idea how this project was going to turn out when I began working on it!

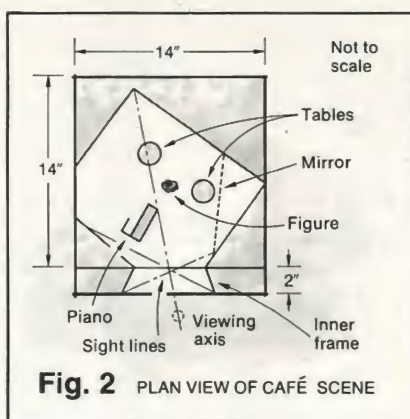
**Deciding how much to model.** At

first I planned to simply mount the Asheton-Bayard Ltd. figure of Humphrey Bogart (No. EK-2, from the Entertainers series by Ray Lamb) on a small wood base with a table or piano. However, without control of the lighting such a piece would have little or no atmosphere — which was what I was really after — so what started as a figure on a base quickly became a boxed diorama.





**Fig. 1** BOX CONSTRUCTION



**Fig. 2** PLAN VIEW OF CAFÉ SCENE

frame and mat was about \$25.00. The frame is aligned with the box by a 1/4" length of 1/4" dowel glued perpendicular to the frame on each side of the opening. These dowels slide into 1/4" holes drilled into the front edge of the box. Two magnetic cupboard latches hold the frame snugly against the box.

The opening in the mat is 5 1/2" x 7". Behind the opening I added a 2"-deep rectangular reveal which narrows the viewing opening to 3 1/2" x 5". This inner frame is important because it provides complete control of the sight lines into the scene and keeps stray light out of the box. Mine is covered with black velvet.

#### Planning and building the interior.

The café scene is a smaller box that slides into the outer case. The inner box rests on four 3 1/2"-high wood blocks fastened to the bottom of the outer case, leaving ample room for the lighting transformer, wiring, terminal strips, and lighting dimmers underneath.

The scene is built on a 14" square of 1/8" particle board. One of the first things I determined was that the viewing axis of the scene should not be perpendicular to the front of the box. By moving the center of interest off center, Fig. 2, I was able to add an inch or two of actual depth, and by placing a mirror along one edge I could make the room look larger than it is. I had to try the mirror at different angles to see which looked best (and which would not reflect another Bogie!).

Front-silvered mirrors like the one I used are available at scientific supply stores and some glass and mirror supply houses. They are fairly expensive compared to regular mirrors; the one in my diorama cost \$14.00, but I feel it's worth the extra expense because there is no apparent gap between the modeled arch and its reflection. Half the main door is also a reflection, and most viewers don't notice the mirror until it is pointed out to them.

The next step was building the walls, Fig. 3. I made paper templates of the arches, traced them onto mat board, and cut the board with a No. 10 X-acto knife blade. In the movie set the arch over the main door was longer and

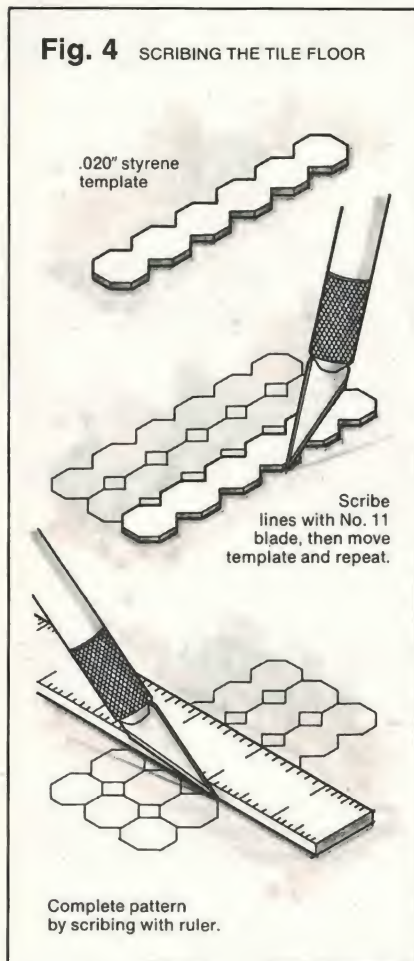
The diorama quickly grew in complexity, too. My initial idea was that the scene inside the box would include the Bogart figure, a few props, and perhaps a ceiling fan; the rest, including the background, would have been black. Realizing that such a scene was also not what I was looking for, I finally decided to actually model the interior of Rick's Café.

After researching the scene (including seeing *Casablanca* eight times), I decided to combine several props from the film in a simplified corner of the café based on my own design. I'd include Sam's piano (complete with music sheets, ashtrays, and a wine glass on top), and tables littered with glasses, ashtrays, a bottle, and a chess set. A spinning ceiling fan would be a must, and the setting would feature stuccoed arches, a moonlit window with venetian blinds, and large wooden doors.

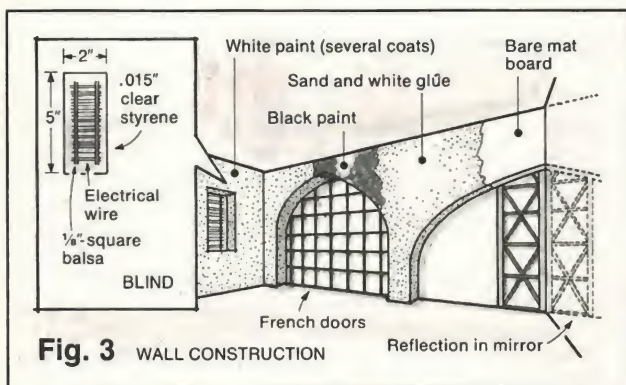
**Building the shadow box.** I started by constructing the outer box from 1/2" plywood, Fig. 1. The box has an open front so that the scene itself can slide in and out. For a finished appearance I covered the sides and top of the box with Midwest Products\* walnut veneer and rubbed the veneer with tung oil.

The front of the box is covered with a frame that I made at a do-it-yourself frame shop, where I also obtained the mat board insert. Total cost for the

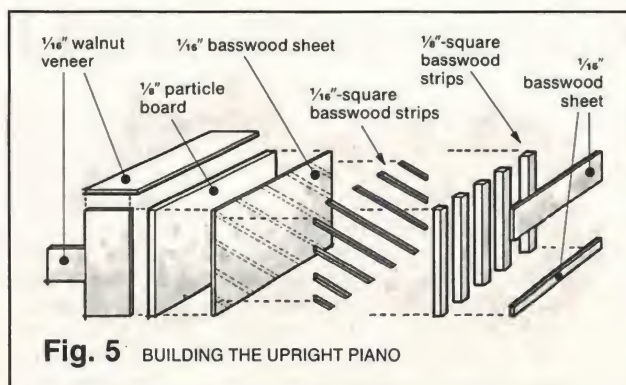
\*Midwest Products, 400 South Indiana Street, Hobart, IN 46342.



**Fig. 4** SCRIBING THE TILE FLOOR



**Fig. 3** WALL CONSTRUCTION



**Fig. 5** BUILDING THE UPRIGHT PIANO



lower than the others, and I cut only half of this arch, letting the mirror reflection furnish the other half.

The taller, adjacent arch is complete, and behind it are large French doors that open into another room of the café. These doors were built by gluing  $\frac{1}{8}$ " square balsa to .015" clear styrene (Walthers\* No. 949-599). To block the view into the other room I glued a piece of tissue paper (I used the paper that came packed with the Walthers clear styrene) to a 7" "curtain rod" made from  $\frac{1}{8}$ " x  $\frac{1}{4}$ " balsa. The curtain rod was then glued to the plastic, above the arch and out of sight. Dim lights glowing behind the translucent tissue curtain add greatly to the overall effect of the scene.

The wall on the left side of the scene is mat board with a  $1\frac{1}{2}$ " x 4" window. I recessed the window about  $\frac{3}{4}$ " into the wall by adding a rectangular box made from .020" styrene around the edges of the opening. The window blind was made by gluing two  $\frac{1}{8}$ " x  $\frac{1}{8}$ " x 4" balsa strips 1" apart on a 2" x 5" piece of .015" clear styrene, the same material used to make the doors. I then glued about 60 2" lengths of electrical wire at right angles to the balsa. The wire had been painted ahead of time with Pactra M21 Mustard and the clear plastic was sprayed with Testors Dullcote to give it a translucent look.

I glued the walls to the particle board subfloor with 5-minute epoxy and added reinforcing blocks made from 1" x 1" wood. To simulate the stucco texture I coated the walls and arches with white glue and poured sand over the glue, brushing off the excess after the glue dried. The result was far too grainy, and my solution was to give the walls several coats of paint to deemphasize the coarse texture.

I started painting by spraying the walls with Testors Flat Black as a primer so that the white overcoats would be a creamy off-white rather than a brilliant white. I lost count of the number of coats of Testors Flat White I applied over the black; I just kept adding coats until the stucco looked right.

**Ceiling and floor.** Making the ceiling was easy — it's simply a piece of mat board painted the same way as the arches and walls were (only using fewer white coats) and glued across the tops of the walls after the scene was complete.

The tile floor, which is a pattern of black octagons and squares with white grout around them, was more difficult to make. Cutting and applying separate tiles would have been too much work, so I made a template and used it to scribe the tile patterns into a painted plastic floor, Fig. 4. First I sprayed the

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While the 90 mm Humphrey Bogart figure is definitely the centerpiece of Richard's scene, in a sense Bogie is a supporting actor here. What makes this boxed diorama work is the way it captures the overall atmosphere from the movie rather than any single element or detail of Rick's Café Americain.

.020" styrene floor with Testors Flat Black, then cut a template consisting of six octagons from the same material. I used the template to scratch the tile pattern into the prepainted floor with a hobby knife. Scratching through the black paint reveals the white plastic underneath, a perfect simulation of grouted tiles. After all the lines were scribed I sprayed Testors Glosscote to achieve a semigloss finish.

**Adding furniture and accessories.** The smaller modeled items in the scene include a piano, two tables with chairs, a working ceiling fan, and a stained-glass hanging lamp.

After contemplating the grueling task of making 88 individual 90 mm scale piano keys, I decided to model the back of Sam's rolling upright. This meant I would only need to make the top, back, and one side, since the rest of the piano would never be seen.

Figure 5 shows how the piano was built. I started by covering a solid particle board core with Midwest Products sheet basswood on the back and Midwest walnut veneer on one side and the top, then added vertical and diagonal basswood strips on the back. I finished by varnishing the entire piano.

The sheet music and wine glass on top of the piano and the bottle and glasses on the tables are dollhouse miniatures, Fig. 6. (The tunes on the sheet music are polkas, but nobody has noticed that yet!) The ashtrays are Phoenix Miniatures\* plates (No. AF1) with four notches made with wire cutters. The cigarette butts are white stretched sprue; filters and lipstick stains were painted on after gluing the butts to the ashtrays.



Figs. 6 and 7. The glasses, bottle, and chess pieces on the café tables are dollhouse miniatures accessories. The realistic tablecloth is made from paper toweling soaked in dilute white glue.

The tables are made from the plastic covers to some fold-up picnic cups I found around the house. Using them saved me the trouble of carefully cutting round shapes that would later be covered by tablecloths anyway. The tablecloths are 3" squares of paper toweling soaked in a 1:1 solution of white glue and water, then draped over the plastic tabletops, Fig. 7. After the glue dried thoroughly I sprayed the tablecloths with one coat of Testors Flat Black and several coats of Testors Flat White. The center posts and feet of the

tables are made from 1/4"-square balsa.

The ceiling fan comes from an unlikely source: It's a four-bladed Cox gas-powered model airplane propeller. The fan is epoxied to a 1/8" metal shaft which passes through the ceiling and is in turn glued to an electric clock mechanism. The clock motor rotates the fan at one revolution per minute, hardly fast enough to circulate much air, but enough to convey the impression of movement without drawing too much attention to itself. The speed turned out to be perfect; often it takes a viewer several minutes to realize that the fan is moving!

The stained-glass ceiling lamp was made from a dollhouse miniature table lamp. I removed the brass lamp base and drilled a hole in the plastic lampshade to accommodate a model railroad 14-volt light bulb and miniature socket. The lamp hangs from a costume jewelry chain cut to length and made rigid by gluing the links together with Super Jet glue. The wires from the socket were painted black, woven through the chain links, and passed through the ceiling.

The star of the scene is the Asheton-Bayard Ltd. 90 mm figure of Humphrey Bogart. Although it doesn't look as much like Bogie as I would like and the head is slightly oversized, the figure is far better than anything that I could sculpt myself. I didn't spend a lot of time painting the figure because the lighting in the box was to be dim and the closest a viewer can get to the figure is 7".

**Lighting — and a finishing touch.** The lighting system is simple. A small train set power pack powers seven 14-volt bulbs, including a blue bulb behind the window, blue and clear bulbs behind the French doors, red and clear bulbs behind the main doors, a clear bulb in the ceiling lamp, and a clear bulb that illuminates the entire scene. The bulbs are wired to the accessory terminals on the transformer, and each bulb has its own rheostat to adjust its brightness. These rheostats (also called potentiometers) cost \$1.00 each at an electronics store; all are fastened to a 3" x 14" panel of 1/8" basswood mounted in the space below the scene.

The final touch for this scene is one that can't possibly be appreciated in a magazine article. I found an inexpensive windup music box at an import store and epoxied it to the inside of the outer case with the winder key protruding through a small hole drilled in the plywood. The tune? Naturally, it's "As Time Goes By." **FSM**

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- Anobile, Richard J., *Casablanca*, Universe Books, New York, 1974.
- Koch, Howard, *Casablanca, Script and Legend*, Overlook Press, Woodstock, New York, 1973.

\*Phoenix Model Developments Ltd., The Square, Earls Barton, Northampton, England, NN6 0NA.



# Modeling Adolph Galland's bare-metal Bf 109F in 1/72 scale

There's always an exception — and this is it

BY WAYNE E. MOYER

**S**HORTLY AFTER the Dayton chapter of the International Plastic Modelers Society was formed in 1968, one of the members brought a co-worker from Wright-Patterson Air Force Base as a guest speaker. Gerhard Hopf started World War Two flying Bf 109s and finished it flying Me 163s. In between combat tours he served as a test pilot, evaluating captured Allied aircraft. He flew nearly every American, British, and French aircraft, as well as the German ones. He was a fascinating and entertaining speaker, full of anecdotes: the origins of the all-red Me 163, and its consequences, for example. Another story he told was of a surprise visit by the General of Fighters, Adolph Galland. According to Hopf, they knew it was Galland while he was still in the pattern, because of his "bare metal, polished Bf 109F with only a Mickey Mouse on it."

That passing reference stuck with me through the ensuing 14 years. I've gone through every Bf 109 and Luftwaffe book I could get my hands on, and exhausted the USAF Museum's files looking for a bare-metal 109. No luck. I quietly decided that my elusive 109 was a faulty 25-year-old memory in a busy pilot's life, but I kept hoping.

On March 30, 1982, General Galland, who survived the war and became one of the leaders of the modern Luftwaffe, spoke at a dinner for the Friends of the Air Force Museum. During the question and answer period, I was able to ask him about my "pet" 109. General Galland confirmed Mr. Hopf's description; natural metal, polished, with only national insignia and his personal emblem. And he had not one, but *two* such Bf 109Fs at his disposal. Both, incidentally, incorporated the same cockpit modifications as did all his combat aircraft — an ashtray and cigar lighter.

In response to a question about whether the all-silver planes carried victory marks, the general answered, "of course, but not all [were stripes]. The number 70, my Oak Leaves and Swords, and the rest were stripes." I wasn't able to ask him about the fabric surfaces, but I assumed the rudder



As personal transportation Adolph Galland flew an unusual pair of identically marked Messerschmitt Bf 109Fs while he served as the Luftwaffe's General of Fighters.

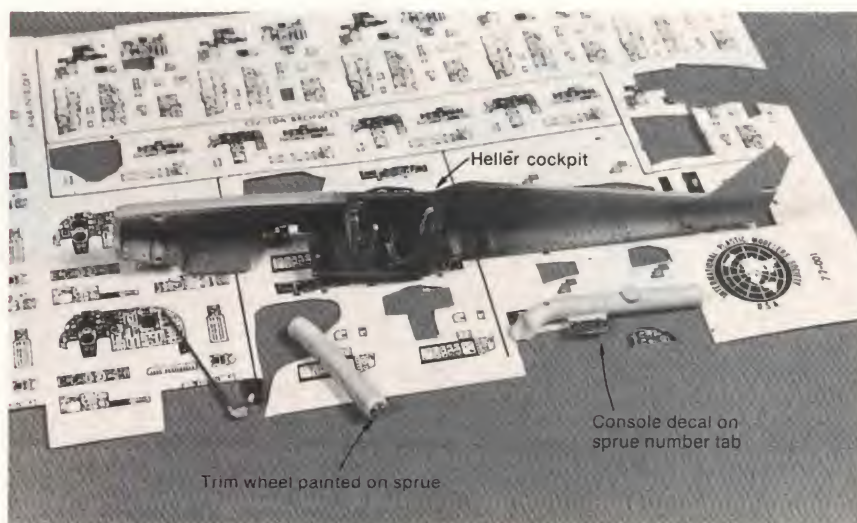


Fig. 1. Heller's cockpit tub and added details make up the interior. Note how a trim wheel has been painted on the end of a scrap of sprue and how console decals have been applied to a sprue number tab.

would have been yellow as on his combat aircraft, and that the ailerons and elevators were silver-doped.

General Galland's description of his victory markings bothered me; all photos and drawings of his combat aircraft show the numeral 69 and then the decoration, while he specifically mentioned 70. However, on rereading his book, *The First and the Last*, I found

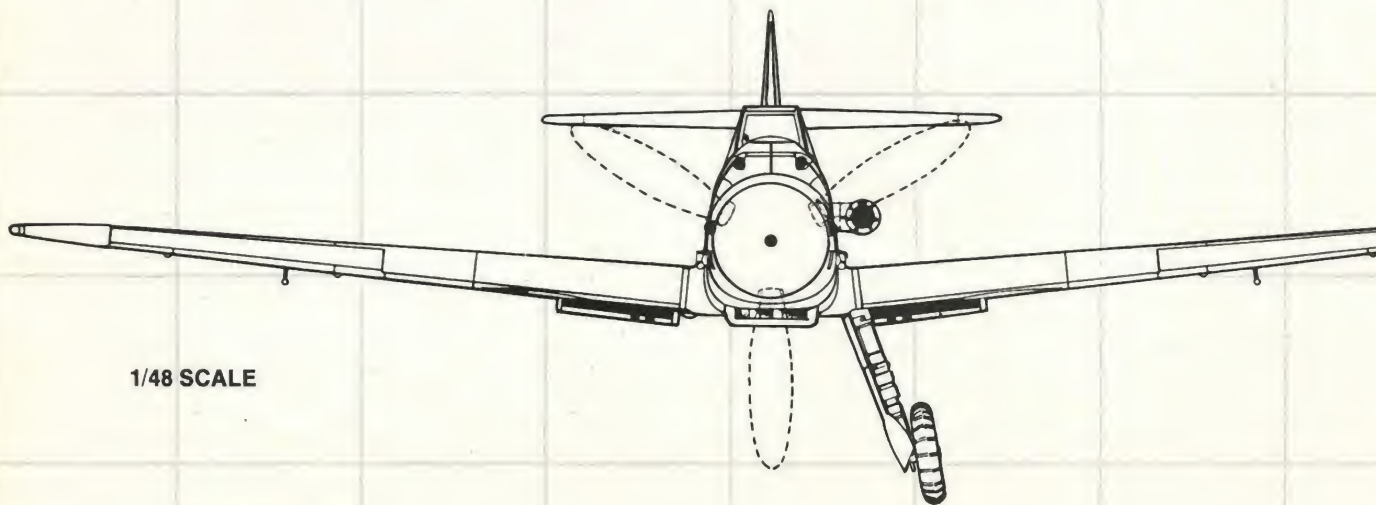
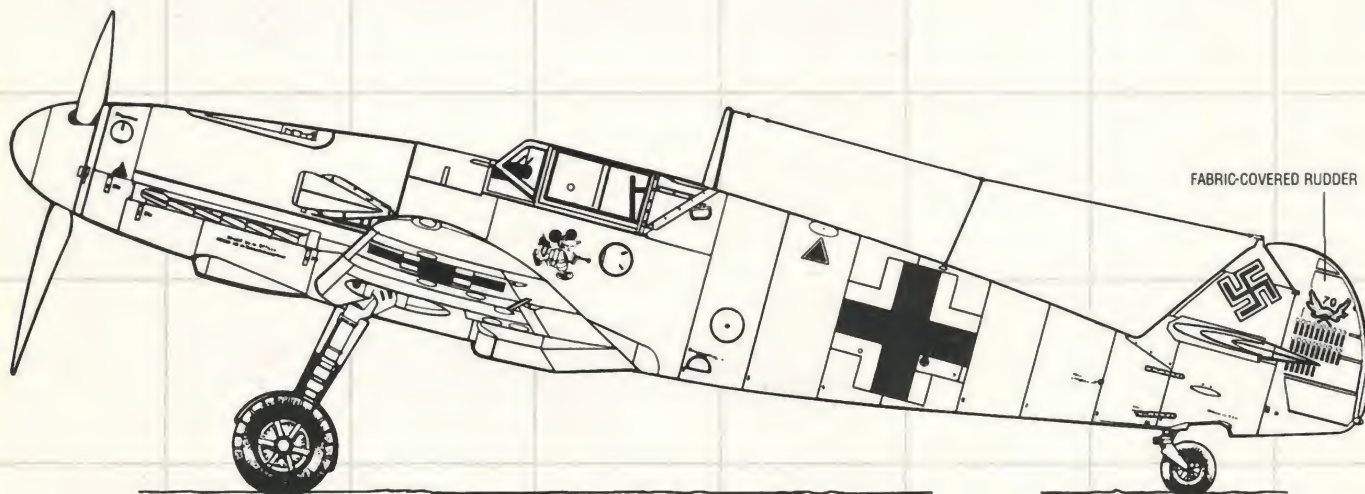
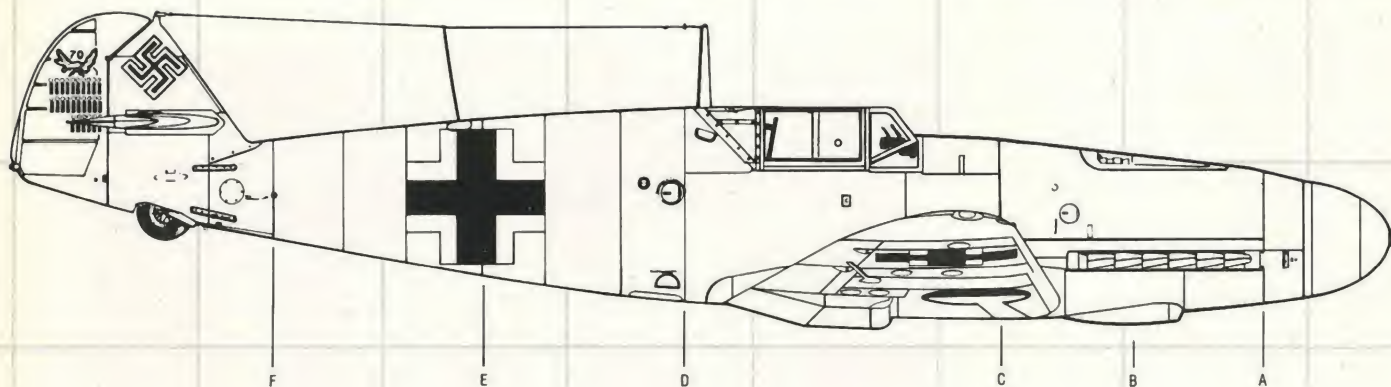
that he specifically states he scored numbers 68, 69, and 70, was shot down twice, was badly wounded, and was notified of being the first to be awarded the Oak Leaves and Swords on his birthday, June 21, 1941. Galland described these combat missions, and mentioned that even at that time he'd had two identically marked aircraft at his disposal, and lost them both that



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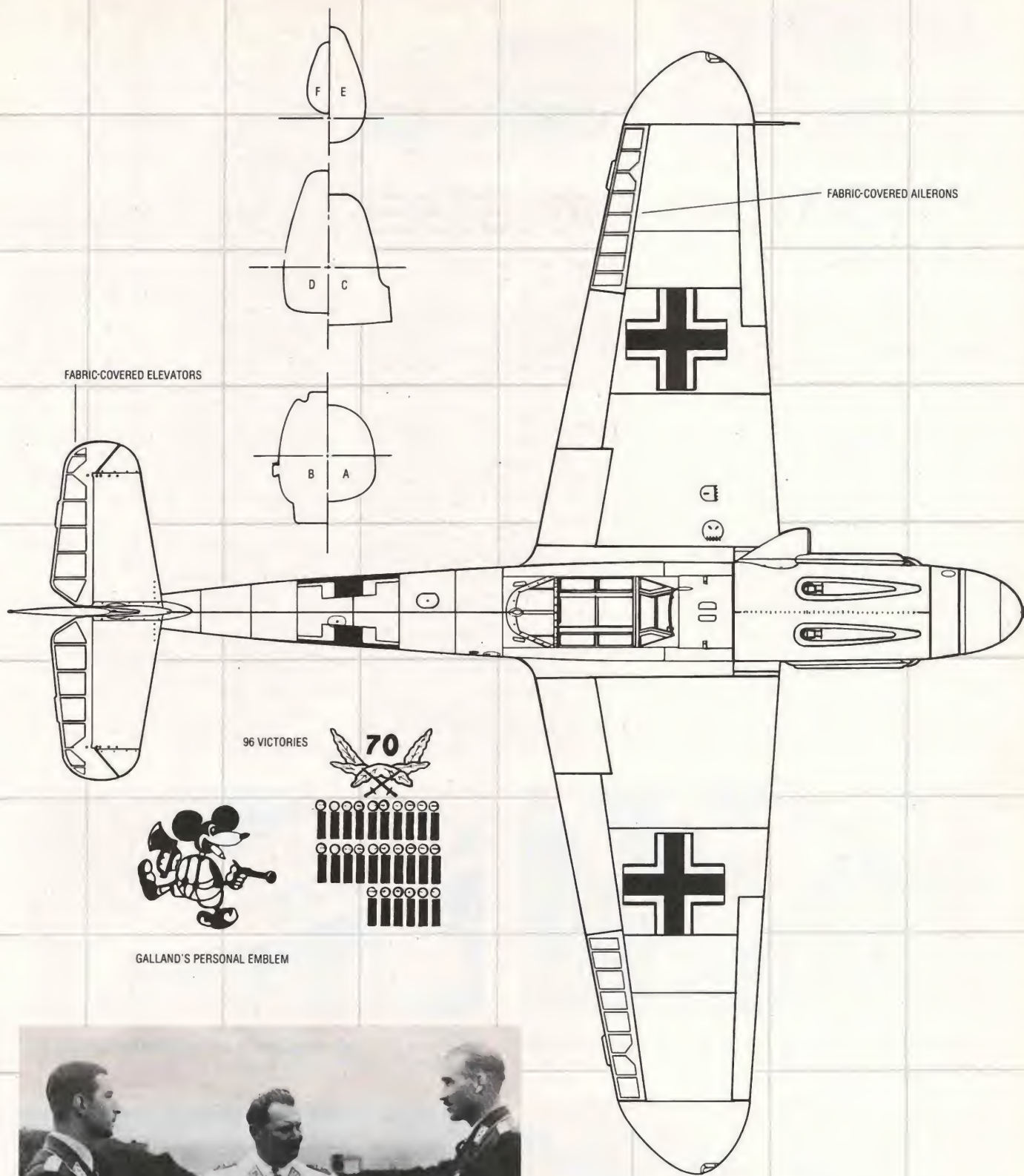
# MESSERSCHMITT Bf 109F

**Manufacturer:** Bayerische Flugzeugwerke A. G.  
**Power plant:** One 1,350 horsepower Daimler-Benz DB601E 12-cylinder liquid-cooled inverted V engine  
**Dimensions:** Wingspan - 32' 9"  
Length - 29' 8"  
Height - 8' 6½"  
Wing area - 173 square feet  
**Weight:** Gross - 6,396 normal load  
**Performance:** Maximum speed - 391 mph  
Range - 528 miles with drop tank  
Two MG 17 7.9 mm machine guns in cowl  
One MG 151/15 15 mm cannon or  
One MG 151/20 20 mm cannon firing through spinner  
**Armament:**



1/48 SCALE





Smithsonian Institution, National Air and Space Museum, Photo No. 11941

Major Adolph Galland is the man on the right in this photo taken early in World War Two. The man in the middle is Reichsmarschall Herman Göring, and at left is Galland's fellow ace, Major Werner Mölders.





Fig. 2. After the seams are filled and the fabric surfaces painted, the model is ready for foil. Note how the aft fuselage opening behind the seat has been filled with Micro Kristal-Kleer.



Fig. 3. Bare Metal Foil can be "grained" by scrubbing it with a Scotch-Brite scouring pad guided by a straightedge. The multi-panel effect is achieved by shifting the grain of each adjacent panel.

day. I assumed that because of some delay in confirming a victory, the rudder on his replacement 109 was painted with "69" and widely photographed, and when the bare-metal 109s were prepared, he took the opportunity to correct that error.

**Construction.** Having finally confirmed this unique 109, I was ready to build it. There are only two Bf 109F kits in 1/72 scale; the older Frog kit (No. F192F) and a nice, new one from Heller (No. 081). Unfortunately, a quick check with drawings and dimensions showed that Heller's 109F has the same fault as its G and original K release: The aft fuselage is about  $\frac{3}{16}$ " too short, and accordingly out of proportion.

The Frog kit, though old, is nearly exact in outline and dimensionally accurate. I decided to use the Frog kit and incorporate the better interior of the Heller kit by simply trimming away

the locating pins and mounting it in the Frog fuselage, Fig. 1. Additional consoles, throttle quadrant, and trim wheel were added using sheet plastic, pieces of sprue, and instrument panel decals.

German aircraft of this vintage usually had the interiors of wheel wells and gun bays painted RLM Gray 02, with Black-gray 66 used for all surfaces in the cockpit. I had to mix the latter myself, since it's not available premixed. After the fuselage was assembled, I filled the seams with putty and sanded smooth. I used a coat of gloss white as a primer and wet sanded again to get a smooth, sealed surface. The fuselage aft of the seat was sealed off with Micro Kristal-Kleer and painted RLM 66 when dry, Fig. 2.

The leading edges of Frog's wings were almost square, so I rounded them off with sandpaper. After I added the wings, I repeated the seam filling pro-

cess. The Frog kit's single exception to outline accuracy is in the horizontal stabilizer. I rounded off the tips to match my references. I painted the fabric elevators silver and the rudder yellow.

**Applying a bare-metal finish.** At this point the model was ready for the metal finish. My favorite is Bare Metal Foil\*, a sheet of thin, self-adhesive foil that not only looks like metal, it is metal. The foil is so thin that it will show anything on the surface, even a stray fiber from a cotton swab.

Bare Metal Foil is shiny, like chrome or highly polished aluminum. Jim Hawley developed a technique of burnishing the foil with a Scotch-Brite pad to remove the gloss and provide a "grain" effect, Fig. 3. Scotch-Brite is a synthetic scrubbing pad found at most grocery stores. A realistic panel effect can be made by alternating the grain of adjacent panels. By shifting the foil on each panel 90 degrees to adjacent panels, you can easily make a realistic, multi-paneled surface that looks even better in real life than in my photos. You can duplicate the panel arrangements from photos of real aircraft, or use the kit panel lines.

All surfaces should be washed and then, just before a panel is covered, cleaned again with a soft cloth and denatured alcohol to remove any oily fingerprints. Begin by covering the wing tips, and then the leading and trailing

\*Bare Metal Aluminum Foil, 19419 Ingram, Livonia, MI 48152.



Fig. 4. Measure the size of a panel with dividers, then cut a piece of foil slightly oversize.



Fig. 5. Use a blunted toothpick to burnish the foil around tight curves and into small depressions.



Fig. 6. To avoid leaving gaps, trim excess foil on the outside of the panel line.



Fig. 7. To cover the wing tips the foil is split, wrapped over the wing tip edge, buffed down, and trimmed.



edges. Measure the size of the panel you want to cover with dividers, Fig. 4, allow a little extra, and transfer the measurement to the foil. Cut out the piece with a straight edge and a sharp knife blade. Lift the foil off the waxed backing, and stick it in place. When it's positioned, buff it down with a soft cloth, a cotton swab, or a blunted toothpick on round surfaces, Fig. 5.

I use kit panel lines as guides where possible, trimming off the excess foil on the outside of the panel line, Fig. 6. When the adjacent panel is covered, overlap the foil at the panel line. Don't try to butt the foil panels; you will inevitably wind up with gaps.

Cover the top of the wing tip first, neatly folding the excess foil over the edge, Fig. 7. Trim this as close to the edge of the underside as possible, without cutting out to the edge. Then cover the underside and trim that to overlap the first piece, again avoiding the edge. I work from the leading and trailing edges in toward the center, Fig. 8. It doesn't matter which direction you go on the fuselage.

**Decals.** Decals are applied as you would on any other surface. However, any carrier film will show, so all decals should be trimmed as close to the color print as possible. I used Microscale decals for the national insignia and found Galland's "Mickey Mouse" and rudder markings on an old sheet in my decal box. I found appropriate swastikas on an old, out-of-print ABT decal sheet, but these are also available from Microscale. The "69" was cut away and replaced with a red "70" from another ABT sheet; numbers from HO scale model railroad numeral sheets will do nicely. Miscellaneous markings and fu-



Fig. 8. Apply foil from the edges of the wings and work inward.

selage frame numbers also came from Microscale sheets, Fig. 9.

**Small details.** Landing gear struts, wheels, gear doors, and the antenna were glued on with Hot Stuff Super T for maximum strength and speedy assembly. I drilled holes in the ailerons for the mass balances from the Heller kit. I moved Frog's antenna mast forward to the correct position on the fixed rear section of the canopy. Fuselage machine gun barrels are lengths of very small metal tubing. As a final touch, red and green Floquil "Lustre-Glaze" was painted directly onto the foil to represent the navigation light lenses. These are transparent colors produced for staining glass.

All that was left was a big sigh of relief. After 14 years of searching, "my" 109 was found, documented, and built. Now, if anybody has a photo of General Galland's Me 262 . . . !

FSM

## REFERENCE

Galland, Adolph, *The First and the Last*, Holt, New York, 1954.

\*Lustre-Glaze, Floquil-Polly S Color Corp., Route 30 North, Amsterdam, NY 12010.



Fig. 9. Wayne applied appropriate decals from his spares box, and modified the victory markings to accurately represent Galland's tally of 70.

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# Scratchbashing a boom truck

This transformation begins with  
MPC's 1/25 scale Stutz Bearcat

BY MIC GREENBERG

I FIRST DISCOVERED the possibilities of modeling trucks in 1/25 scale when I came across the MPC Stutz Bearcat (kit No. 3151). This kit offered beautiful detail, a great set of rims with separate rubber wheels, excellent fenders, a good radiator, adequate front springs and axles, and above all a finely molded Wisconsin Beaver four-cylinder engine. There were other excellent parts, too, including a set of clutch and brake pedals, a well-crafted steering wheel, and chrome-plated but usable gear shift and emergency brake levers.

My boom truck has no particular prototype, but is based on my research on 1915 commercial vehicles and boom trucks I've seen on the Northern Cali-

fornia coast. Boom trucks are not to be confused with wreckers; although there are many similarities, boom trucks were used primarily for lifting and were most often seen in junkyards and wharf areas.

**The new cab.** I break vehicle construction into large subassemblies which are built, painted, and handled one at a time. This model called for three major subassemblies: the cab, the chassis (including fenders, axles, and engine), and the body (including the boom, gallows, and bed superstructure), Fig. 1.

I found a side-view photo of a 1916 Peerless TC-2 two-ton truck in an old *American Licensed Automobile Manufacturers Handbook*. I had the photo blown up to 1/25 scale at a photostat shop, Fig. 2, then traced the outlines of the cab onto artist's vellum tracing pa-

Mic's boom truck was made from classic car kits, parts from tank recovery vehicle kits, model railroad and model ship details, and sheet styrene.

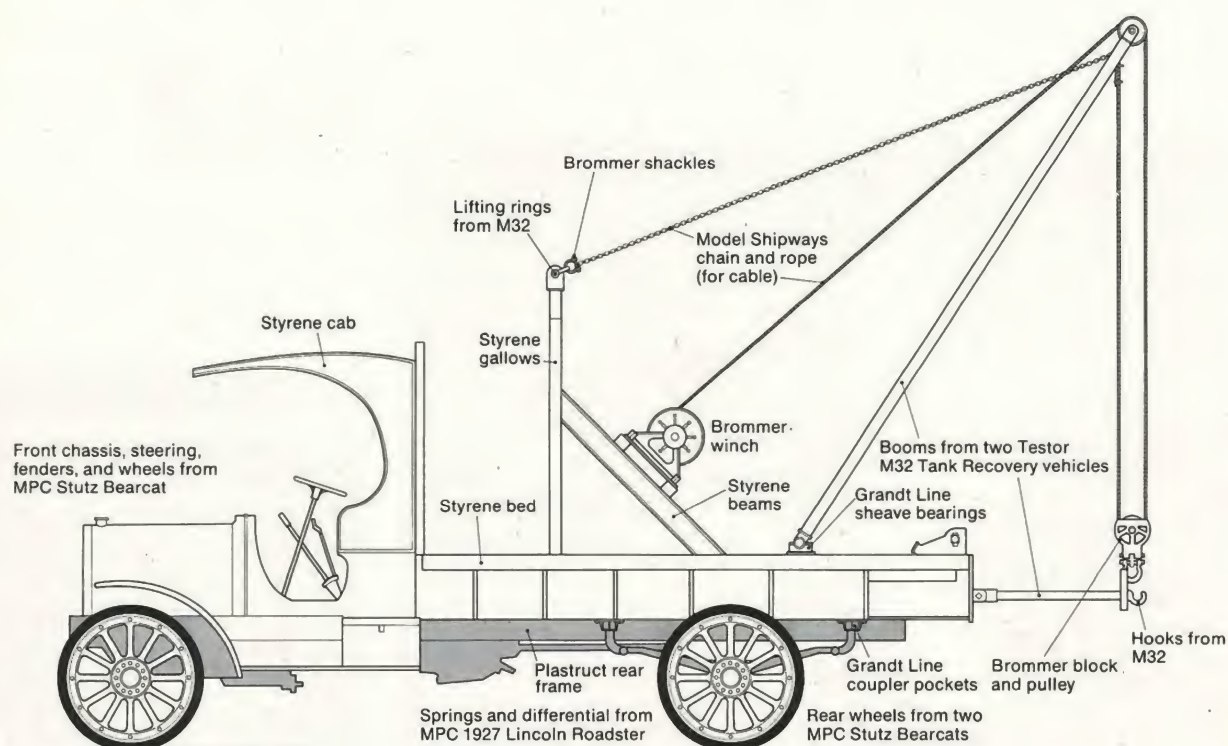


Fig. 1 OVERVIEW OF THE BOOM TRUCK





Fig. 3. The cab was made from sheet styrene. Note the thin strip which runs around the forward edges of the sides. The thin floor provides a bonding surface to mount to the styrene box on the chassis.

per (available in art supply stores). Next, I gave the vellum a coating of graphite on the back side by rubbing a pencil sideways along the lines. I taped this "smudge sheet" to .020" sheet styrene and drew over the outline of the cab, transferring the image to the plastic. The slight depression caused by the pressure of the pencil made a track for the knife. I used this method to cut two identical cab sides.

I tacked the two cab sides, back, floor, and roof together with tiny dabs of tube cement, followed with liquid cement applied with a toothpick. I attached a narrow strip of thin styrene to



Fig. 4. The rear frame of the truck is Plastruct channel. The dual rear wheels came from two MPC Stutz Bearcat kits. The styrene box that replaces the kit's seat also serves as the bonding surface for the scratchbuilt cab.

the leading edges of the cab to form a T-shaped cap, Fig. 3.

**Chassis.** I sawed through the MPC Stutz chassis just behind the seat and used the front end without modification. This included the axle, radiator, engine, fenders, and running boards. I removed the engine bonnet and added a rusty .020" piano wire support (I placed the wire outdoors to rust naturally) from the fire wall to the top of the radiator. I replaced the Stutz seat with a styrene box, Fig. 2. I inverted the Bearcat steering column to create the upright angle of the truck's column.

The rear frame was scratchbuilt from

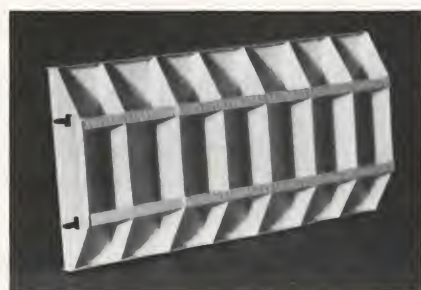


Fig. 5. The truck bed was built up from .020" styrene. The thin lengthwise strips match the frame, providing a large bonding surface.

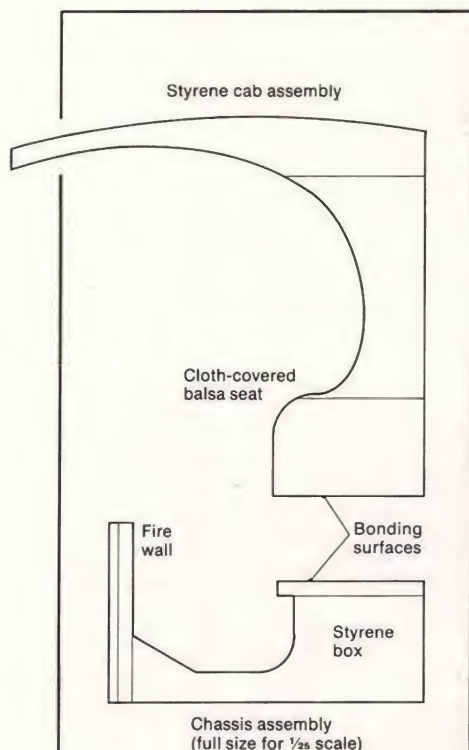


Fig. 2 TRUCK CAB

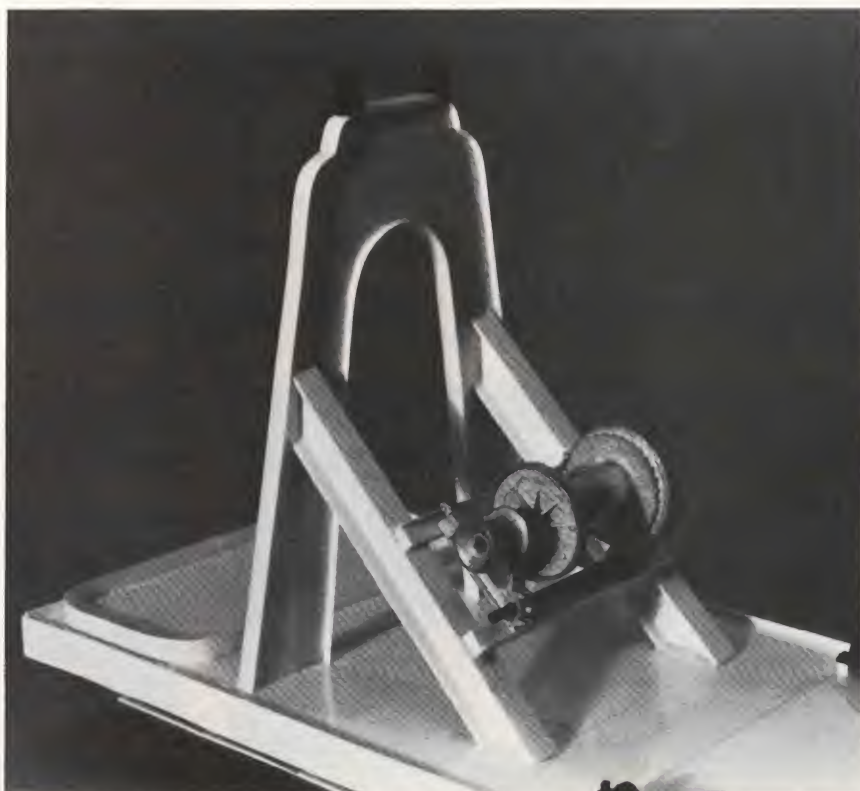


Fig. 6. The boom gallows also has thin styrene strips around both the inside and outside edges. Here the Brommer winch drum has been positioned temporarily to determine the position of the winch mounts. Note the angled sheet styrene beams.



Boom trucks were used for lifting heavy objects such as this engine taken from another MPC Stutz Bearcat kit.



1/4" Plastruct\* channel, Fig. 4. I used the springs and differential from an MPC 1/25 scale 1927 Lincoln Roadster (kit No. 3152) and attached them to the chassis using Grandt Line\*\* No. 5006 HO coupler pockets.

The bed and the eight supports underneath it were made from .020" sheet styrene, Fig. 5. I used a NorthWest

Short Line\*\*\* Chopper to duplicate the angles on the supports. I glued the supports to the underside of the bed. When they were dry, I attached two styrene strips along the bottom of the bed supports. These strips provided a bonding surface for cementing the bed to the frame.

**Boom and gallows.** I used the velum transfer method to produce the boom gallows from .020" sheet styrene.

A thin strip of styrene was glued to the inside and outside edges of the gallows. I also produced two large "I" beam supports from sheet styrene and cemented these at 45-degree angles to the gallows, Fig. 6.

I used the booms from two Testor's 1/35 scale M32 Tank Recovery Vehicles (kit No. 806) for the boom and standoff sway bar at the truck's rear. The lift rings from the M32 kit were attached to the top of the boom gallows, then the boom and standoff sway bar were glued in stationary positions on pillow blocks

\*Plastruct, 1161 Monterey Pass Road, Monterey Park, CA 91754.

\*\*Grandt Line Products, 1040B Shary Court, Concord, CA 94518.

\*\*\*NorthWest Short Line, P. O. Box 423, Seattle, WA 98111.



Fig. 7. The boom from the M32 has been attached to the bed. The chain has not been permanently attached yet.



Fig. 8. Mic dry-fitted all the major subassemblies to get an idea of the overall appearance of the model.



Mic's boom truck moves an old wreck. Model railroad and ship parts provide details such as the chain, cable, winch, block, and pulley.



from Grandt Line No. 300-3511 O scale 60" Mine Head Frame Sheaves, Fig. 7. A Model Shipways\* chain runs from the end of the boom to the lifting rings on the boom galleys where they are attached with O scale shackles by C. H. Brommer\*\* (No. SH-6). I dry-fitted all the major subassemblies to get an idea of how the model would look when finished, Fig. 8.

**Finish.** I like worn out, tired vehicles with lots of rust, dust, and peeling paint. I airbrushed the boom truck with Floquil paints to simulate painted metal surfaces. My first coat was a mixture of 80 percent Rust to 20 percent Roof Brown. I allowed this base coat to dry for at least a week. The second coat was 70 percent Grimy Black, 20 percent Reefer White, and 10 percent Graphite. I sprayed this on very lightly so that the base coat showed through. The final coat was the finished color. I weathered the model with finely sifted dirt, rust, and powdered pastel chalk.

**Final details.** I weathered Kappler Mill & Lumber Company's\*\*\* scale model wood for the truck bed and running

boards. I used one of the large headlights in the Stutz kit but mounted an M. V. Products\*\*\*\* lens in it for a more realistic look. The winch drum came from Brommer's American Hoist and Derrick (kit No. DE-310), and the block and pulley from Brommer's No. LB-16. The winch cable is cotton line from Model Shipways painted with a wash of Floquil Rust and Roof Brown. I made the seat from balsa wood because it was easy to form the cushion shape, then covered it with a piece of cloth from an old T-shirt.

Since I chose to finish each subassembly individually, I attached the seat to the cab and the cab to the chassis with Devcon 5-minute Epoxy. Epoxy allows permanent bonding of the components without the risk of damaging the finish. The steering wheel and brake lever would have interfered with the installation of the seat had I attached the cab to the chassis first. The styrene box on the chassis provided a large bonding surface for the mounting of the cab.

The finished model is both big and imposing yet delicate and mechanically interesting. It's not your everyday truck, and it adds an air of realism to scenes of rural America in the twenties and thirties.

**FSM**



The weathered timbers and rusted frame suggest years of duty through hot summers and damp winters. Note the dual wooden spoke wheels from two Bearcat kits.



The Bearcat front end was used unmodified. Note the single headlight and the water bag draped in front of the radiator. FSM plans to have author Greenberg return for a full explanation of his subtle and convincing weathering techniques.

\*Model Shipways Co., Inc., 39 West Fort Lee Road, Bogata, NJ 07603.

\*\*C. H. Brommer Models, P. O. Box 93, Lakehurst, NJ 08733.

\*\*\*Kappler Mill & Lumber Co., 1760 Monrovia, A15, Costa Mesa, CA 92627.

\*\*\*\*M. V. Products, P. O. Box 6622, Orange, CA 92667.





This 1/35 scale diorama depicts an M48A3 on road patrol duty during the Vietnam conflict. The Tamiya model is almost stock, a

fine example of a striking model achieved through careful painting and detailing rather than an extensive rework of the kit.

## Modeling a moving pillbox in 1/35 scale

A simple but effective one-model diorama

BY FRANCOIS VERLINDEN

**M**UCH OF VIETNAM was bad tank country, with trees, bushes, and swamps rendering many areas virtually impassable to armored vehicles. When armor was used, the Vietcong were always present with antitank weapons, and just one man hidden in a tree and armed with two grenades meant a lot of trouble. In many cases tanks were used in convoy duty on the open road, and even the roads weren't easy going; many were mined, and the chief tactic of the Vietcong was ambush.

Even so, because of the heat and the danger from mine detonations many tank crews preferred to ride on top of the vehicle, thereby exposing themselves to small arms fire and rocket-propelled grenades. Such a crew is the subject of this 1/35 scale diorama. Even though their M48 is not dug in, they've built a sandbag parapet on the turret roof to afford extra protection against close-range attacks, virtually making their tank into a moving pillbox.

**Changes to the M48.** The Tamiya M48A3 kit (No. MM220) is beautifully detailed and required little in the way

of modifications to build the vehicle represented in my diorama. Before starting basic assembly I added evidence of battle damage to the fenders as is often seen in photos of Vietnam M48s. I removed parts of both front fenders and reworked them with a razor saw and knife, including thinning them with sandpaper. After thinning, I formed dents by heating various spots and pushing on them with the blunt end of a pencil while the plastic was soft, Fig. 1.

Most of the work in this project involves the turret. I assembled it in accordance with the kit instructions, but kept the Xenon searchlight, machine gun, and spare road wheels separate for ease of painting. I positioned the gun barrel at the lowest possible declination and filled the resulting gap between the gun mantlet and turret with epoxy putty modeled to match the fabric gun mantlet cover of the kit.

Next I glued the spare track links on the turret, referring to pictures of the





An overall view of the moving pillbox diorama from behind the vehicle. Note how the basic earth color on the ground has also been worked onto the lower surfaces of the tank. The vast expanse of scenery behind the model is a photographic background.

real thing. I needed six links on each side of the turret to serve as supports for the sandbags, but the kit includes only six spares. I took the extra ones from a second kit, which I'll use later for another project where I won't need the spare links.

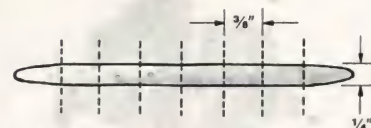
**Building the sandbag parapet.** The sandbags are made from epoxy putty, Fig. 2. I start by kneading the putty into a 1/4"-thick roll, cut the roll into 3/8"-long pieces, then form each piece into a rectangular block. The individual bags were piled on top of the spare track sections and other turret stowage and on top of each other, conforming to the shape of the turret.

Referring to pictures is essential in achieving the right look for the stacked sandbags. While soft, each bag was gently pressed into its neighbors to give it a natural and realistic shape. I pressed a piece of fine wire mesh into the visible portions of each bag to impart a fabric-like texture, then scribed the sewn seams with a sharp pencil. When all the sandbags had been formed, placed, and textured I set aside the turret subassembly to dry overnight.

**Painting and weathering.** I started painting by spraying the whole model with Pactra IF30 Khaki, following immediately with a very light coat of IF28 Dark Earth sprayed on and around the

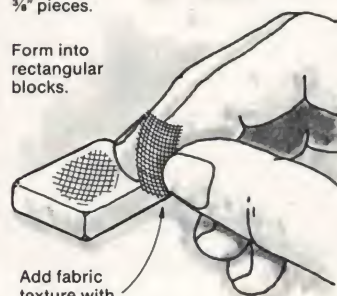
**Fig. 2** MAKING THE SANDBAGS

Work epoxy putty into 1/4" roll.



Cut into 3/8" pieces.

Form into rectangular blocks.



Add fabric texture with fine metal mesh.



Add seam detail with pencil point.

running gear, fenders, and the hull rear and bow. After allowing the paint to dry for a few hours I gave the model a heavy coat of ordinary varnish cut half and half with thinner. The varnish is to protect the paint coats, and it must be allowed to dry for at least two or three days so it won't wear off during weathering.

The first step in weathering the M48 was to treat the entire model with a wash consisting of 8 parts turpentine

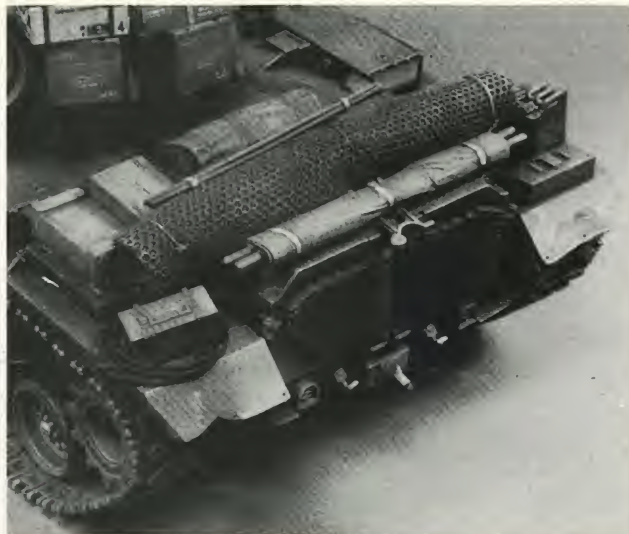


**Fig. 1.** The assembled M48 just before painting. Note the thinned and damaged fenders, the surgical-tape cover on the searchlight, and, of course, the dozens of epoxy putty sandbags.

**Fig. 3.** This close-up shows the texture and seams on the sandbags, the scuffed paint around the driver's hatch, and the cord tow cable. Modifications to the driver figure include dust goggles, a helmet-mounted microphone made from fine stretched sprue, and the name "DUFFY" painted on his tanker's helmet.







Figs. 4 and 5. (Left) The focal point of the diorama is the heavily sandbagged turret roof of the M48A3. (Right) The rear deck of the tank includes a roll of chain link fencing, a common item of extra equipment seen on armored vehicles during the Vietnam

conflict. The fencing was erected around the vehicle at night as an added safeguard against rocket-propelled grenade attacks. The coiled refueling hose on the left fender was made from a length of soft wire solder.



Fig. 6. The partially completed diorama base before addition of the vehicle. Here static grass is being applied over wet earth-colored paint. The planks over the shallow ditch help direct the viewer's eye toward the tank.

and 2 parts flat black. This serves to fade the paint and add an impression of depth. Apply the wash to one small area at a time so you can soak up excess color with a soft cloth while the wash is still wet.

I highlighted details by first dry-brushing with a medium earth paint, followed by an olive green shade, then by a light sand color, and finally by some red-brown to represent dust, especially on the running gear and fenders. The sandbags were dry-brushed separately with Humbrol HM8 Khaki Drill and a medium earth color.

To simulate scuffed and worn paint I lightly dry-brushed a mixture of silver and flat black around the hatches, hand grabs, and engine access panels and doors, Fig. 3. The same mixture is used to make a chipped paint effect, but it is applied with a fine-point brush. I used heavily thinned Burnt Sienna oil paint to simulate rust, especially on the bent and scratched fenders.

The track, which comes molded in

silver-gray polyethylene, was painted flat black and dry-brushed brown-gray on the rubber parts and treated with the silver-black mixture on the metal parts. Thinned Burnt Sienna was flowed around the track connectors and guide teeth.

The fabric searchlight cover was made from 3M Micropore surgical tape. After painting I added the searchlight assembly to the gun mantlet.

**Adding figures and extra equipment.** The M48A3 kit includes tank commander and driver figures, and I took the other two crew members from Tamiya's U.S. Armoured Troops set (MM-217). I modified one of them with a tropical hat made from epoxy putty, Fig. 4.

Next the long search for acceptable extra equipment commenced. Bed and tent rolls were made from tissue paper; smoke grenades and Coke cans were made from sprue. The boxes of C rations are Modelworld\* accessories. The rolled wire fencing, Fig. 5, is made from a fine, cotton-mesh fabric (similar to that used to make wedding and mourning veils), rolled up, secured with straps, then painted a rusty color. The ammunition crates, ammo pouches, and M16 rifles were taken from various accessory kits. All equipment and figures were glued on the model with rubber cement.

**Building the diorama base.** The bottom portion of the diorama was cut from a piece of wood-textured hardboard wall decoration, and the groundwork on top of it is a slab of fine-grain Styrofoam. The ditch was dug with a sharp knife, and the Styrofoam was then glued to the base and covered with

Celluclay\*\* to add relief and texture.

While the Celluclay was wet I sprinkled on some fine sand and pebbles and lightly pressed them into the groundwork. Once the Celluclay had dried I painted it with a very dark earth shade, and sprinkled static grass on the edges of the road before the paint dried, Fig. 6. The groundwork was highlighted by dry-brushing it with various earth and sand colors, and the grass was treated in the same way with different tones of green, yellow-green, and earth.

The patch of tropical vegetation in one corner of the diorama is made from HO scale palm trees. After painting the individual leaves I stuck them into a ball of epoxy putty to keep them together. These "plants" were then added to the diorama with white glue and the epoxy portions covered with static grass.

The last step was to fasten the tank to the diorama with white glue. The finished model, though simple to build and paint and not a conversion, looks a lot different from a stock, out-of-the-box M48A3.

**FSM**

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\*Modelworld, Berlaarsestraat 36, 2500 Lier, Belgium.

\*\*Activa Products, P. O. Box 1089, Taunton, MA 02780.



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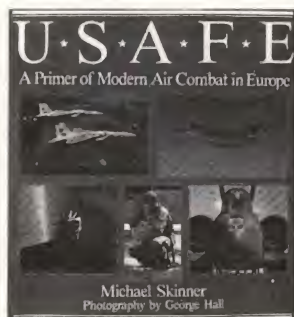
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BY BURR ANGLE



### USAFE, a Primer of Modern Air Combat in Europe

Author Michael Skinner and photographer George Hall recently toured most major bases of the United States Air Forces in Europe where they interviewed enlisted men and officers of all ranks, especially fighter pilots, and took many photos of such planes as the F-4, F-15, F-111, A-10, OV-10, and F-5E on the ground and in the air. Their findings and photos are printed in an 8" x 8 3/4", 138-page, soft-cover book that describes the current state of USAFE (pronounced "you-soff-ee") and that includes glossaries of abbreviations and fighter pilot slang, and a table of USAFE aircraft markings. In addition to descriptions of U. S. planes, bases, logistics, and air defense, there are brief discussions of other NATO air forces and the Soviet air forces.

Included are 47 excellent black-and-white and 22 color photos. The book is published by Presidio Press, 31 Pamaron Way, Novato, CA 94947; the price is \$9.95.



### NZPAF/RNZAF Aircraft Colour Schemes, Markings, Photographs, Histories, Volume 1

Written and published by Warren P. Russell, this 136-page, 6 7/8" x 9 3/4", soft-cover, wire-bound book contains 33 pages of drawings and 70 black-and-white photos showing the color schemes and markings on a number of aircraft used by the New Zealand Professional Air Force (1923 to 1934) and Royal New Zealand Air Force (1934 to the present).

The aircraft covered are the AESL Air-tourer T6/24 and NZAI Airtrainer CT-4B; Airspeed Oxford AS.10 Mk.1 and Mk.2, AS.42 and AS.43; Airspeed Consul AS.65, Auster J/5; Auster C.4 Antarctic; Avro 504K and 504L; Avro 626; Avro Anson Mk.1 and Mk.12; BAC Strikemaster Mk.88; Bell 47G Sioux; and Bleriot Type XI Monoplane.

Other chapters provide a brief history of the New Zealand air forces; descriptions of paint colors, fin flashes, and roundels; and inventories of military and training aircraft operated by New Zealand forces since 1913. Warren presents the information in ways that make it especially useful to modelers.

The book is sold by New Zealand Aero Products, P. O. Box 17, Invercargill, New Zealand, for NZ\$16.00 plus NZ\$2.00 for postage outside New Zealand. Check with your bank for the exchange rate of U. S. dollars to NZ dollars.



### Arco Illustrated Guides

Arco Publishing Inc., 219 Park Avenue South, New York, NY 10003, now distributes in the U. S. and Canada an interesting series of reference books on such topics as the aircraft of the modern U. S. and Soviet air forces, the Israeli Air Force, surface ships of the U. S. and Soviet navies, modern submarines, and airliners. The books are published by Salamander Books Ltd., London, England.

Each 4 3/4" x 8 3/4", hard-cover volume contains several hundred color photos, paintings, and drawings, as well as tables of statistics and brief histories of ship and aircraft types. Each is 160 pages, except the airliners book which is 280 pages; the price is \$9.95 each except the airliners book which is \$10.95.

All of the authors are authorities in their fields. For example, the air force guides are by Bill Gunston; the airliners volume is by William Green and Gordon Swanborough.



### Chance Vought F7U Cutlass

The Vought Model V-346A won a Navy design contest for a jet-propelled, carrier-based, naval fighter on June 25, 1946, and

the type was designated XF7U-1. Later variants were the F7U-1, F7U-3, 3M, and 3P. Cutlasses served with the U. S. Navy through the early and mid-1950s.

Steve Ginter's 8 1/2" x 11", 106-page, soft-cover book on the Cutlass contains 233 photos (3 in color), many drawings of aircraft details, and extracts from flight test and pilot reports. Other sections describe the deployment of Cutlasses among Navy squadrons. The photos and other data are valuable to any modelbuilder interested in this pioneer fighter.

The book is available from the author at 1754 Warfield Circle, Simi Valley, CA 93063; the price is \$13.95.



### Observer's Directory of Military Aircraft

Compiled by William Green and Gordon Swanborough, this 256-page, hard-cover, 7 7/8" x 9 7/8" volume contains 694 black-and-white photos, 239 3- or 4-view silhouettes of aircraft by Dennis Punnett, and statistics and notes about 301 aircraft currently used by the armed forces of all nations. The aircraft are arranged alphabetically by type and manufacturer; there is an index. The book is published by Arco Publishing, Inc.; the price is \$16.95.

The information on surviving examples of old aircraft is especially interesting. For example, about 40 Spanish license-built Bücker Jungmanns (a 1934 design) are still used by the Academia General del Aire and at least 60 air forces still fly the C-47.



### Air War over Southeast Asia

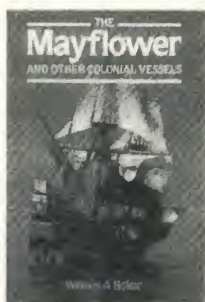
The second of Lou Drendel's projected three volumes on aerial warfare in Vietnam, this book covers the period 1967-1970. This 8 1/2" x 11", 80-page, soft-cover book contains 234 photos (13 in color) and 11 paintings by the author. Land- and carrier-based airplanes and helicopters of the U. S. military are covered thoroughly; those of the other combatants receive less coverage.

The author is convinced that American air power could have inflicted unbearable losses on the North Vietnamese early in the war, saving thousands of lives. He is con-



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This book provides a comprehensive history of the design, construction, and rigging of both the larger colonial ships and the small shallops, pinnaces, barks, and ketches through extensive illustrations and an authoritative text.

A highly respected naval architect and ship historian, Baker supervised the reconstruction of more than two dozen colonial vessels. He is probably best known for his replica of the *Mayflower* that made its own historic crossing of the Atlantic in 1957.

*The Mayflower and Other Colonial Vessels* represents a compilation of data drawn from all William Baker's previous works, the result of a lifelong study of colonial shipbuilding.

1983. 192 pages. 100 illustrations. List price: \$15.95



### SOVIET WARSHIPS:

#### The Soviet Surface Fleet, 1960 to Present

By John Jordan

Jordan, a noted naval analyst, presents a detailed analysis of the new generation of Soviet surface warships—from the Kynda-class guided missile carriers of the 1960s to the new nuclear powered battlecruiser *Kirov*.

The major classes of Soviet surface ships covered are Kynda, Kresta I, *Moskva*, Kresta II, Krivak, Kara, *Kiev*, *Kirov*, and the new destroyers *Sovremenny* and *Udaloy*, each of which has a chapter devoted to it.

Complete details of each class are given including design, construction, service career, propulsion, weapons and radar. The strategic thinking behind each new concept is examined.

In addition to over 150 superb black-and-white photographs, line drawings of each class are provided with details of fittings and armament. There are also over 30 tables of ship specifications, missiles, guns, and aircraft carried by each class.

1983. 128 pages. 160 illustrations. 33 data tables. List price: \$18.95



### BRITISH WARSHIP DESIGN IN WORLD WAR II:

#### Selected Papers from the Transactions of the Royal Institute of Naval Architects

By R. Baker, W.J. Holt, J. Lenaghan, A.J. Sims, and A.W. Watson

Immediately after the second world war, the wartime experiences of British warship designers were summarized in a series of papers read before the Royal Institute of Naval Architects, and subsequently published in its *Transactions* for 1947. These papers are first-hand accounts by the people directly responsible for the new shiptypes and innovative designs produced in response to the pressures of war.

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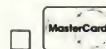
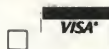
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temptuous of advisers and cabinet officers such as Robert McNamara who persuaded U.S. presidents to restrict or even halt bombing in North Vietnam.

The book is published by Squadron/Signal Publications, Inc., 1115 Crowley Drive, Carrollton, TX 75011-5010; the price is \$8.95.



### The Famous "F" Series, Revised Edition

The two-seat Waco biplanes of the F series that were built between 1930 and 1942 are among the prettiest and most serviceable lightplanes ever made. This 8½" x 11", 92-page, soft-cover book written and published by Raymond H. Brandy contains 66 black-and-white photos, aircraft specifications and production records, 3-view drawings of the RNF, UBF, YPT-14, and UPF-7, as well as a brief description of each model in the F series. A special feature is 15 full-page photos of restored Wacos, all of which are excellent modeling subjects.

The book is sold for \$12.95 by Historic Aviation, 3850 Coronation Road, Eagan, MN 55122.



### Flags for Ship Modellers and Marine Artists

First published in 1950, this 84-page, 4¾" x 7¼", soft-cover book has been reissued by Conway Maritime Press, 24 Bride Lane, Fleet Street, London, EC47 8DR, England; the price is £3.50. It contains text and 104 black-and-white line drawings showing the flags used on English vessels since about 1300, on the ships of other major European maritime powers since about 1700, and on U.S. vessels since 1776. The bibliography indicates that *National Geographic* has published a number of articles on U.S. and other flags over the years—these should be easy to locate since many public libraries have a complete collection of the magazine.

### Modern Combat Aircraft and Insignia

Originally published in England in 1978 with the title *Combat Aircraft*, this soft-cover, 4¾" x 7½", 130-page book contains photos, paintings, and brief descriptions of 65 military aircraft now in service. There

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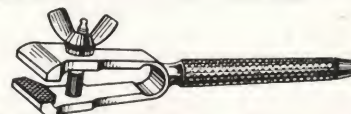
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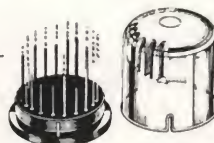
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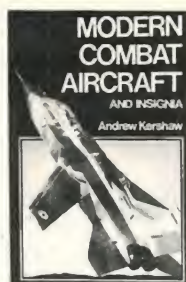
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are 88 photos (71 in color) and 71 color paintings showing aircraft in flight.

The book's most interesting feature, however, is a section that shows in color the national insignia used by the air forces of 96 countries.

The book is published by Arco Publishing, Inc.; the price is \$6.95.

### Space Shuttle, America's Wings to the Future, Second Edition

Written by Marshall H. Kaplan, president of an engineering consulting firm that has had many contracts with NASA, this 216-page, 7 1/2" x 11", hard-cover book contains text; 108 black-and-white photos; 103 drawings, maps, and charts; and 8 pages of color illustrations and photos. There are scale drawings of the Space Shuttle as well as color schemes and markings.



The text has been updated through mid-1982 and includes data on the Space Shuttle's first flights. Other chapters deal with such topics as how to rent space on the Shuttle, typical mission profiles, safety precautions, and the history of the Shuttle project.

The book is published by Aero Publishers, Inc., 329 West Aviation Road, Fallbrook, CA 92028; the price is \$19.95.

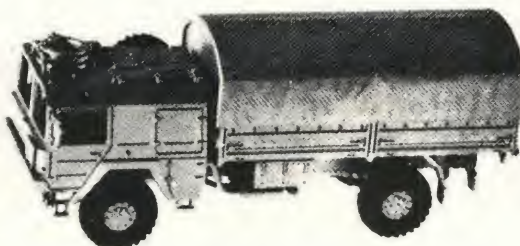


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Japan's World War II Assault



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Originally published by the Smithsonian Institution Press in 1973 and now republished by Aero Publishers, Inc., Robert C. Mikesh's 7 1/4" x 10 1/2", 86-page, soft-cover volume (\$8.95) contains 79 black-and-white photos, 23 drawings and maps, a bibliography, and a chronology of balloon bomb incidents. The text, based on research in the U. S. and Japan, describes the history of the balloon bomb campaign, the construction and armament of the balloons, and launching methods.

More Book Briefs on page 68





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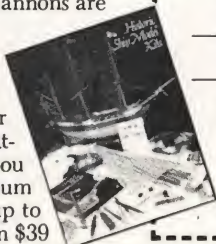
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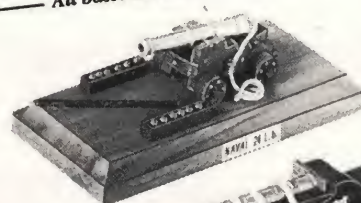
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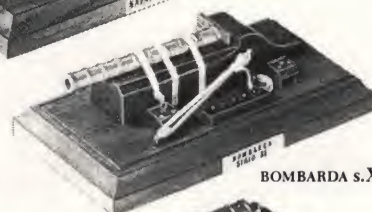
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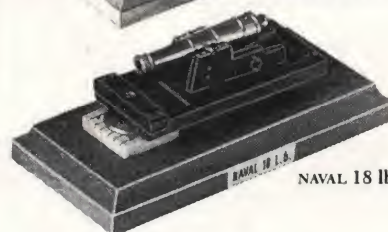
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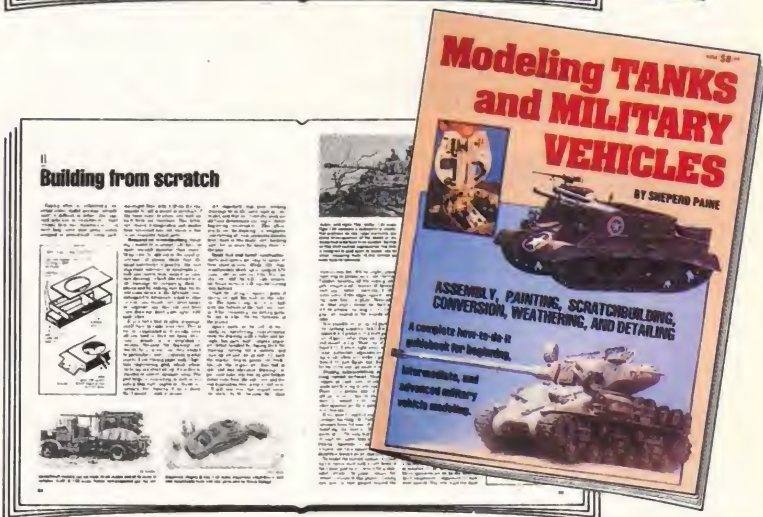
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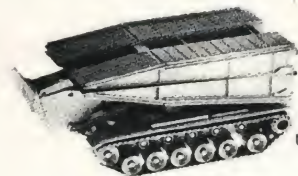
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The A-20 Havoc (or "Boston" to the British) was used in Europe from the time of the German invasion of France through the German surrender, primarily as a low- or medium-level light bomber. It was used in the Pacific as a low-level bombing and strafing plane, especially against shipping and airfields. The author states that 3,125 of the total of 7,385 A-20s built went to Russia, but little is known of their deployment.

This 50-page, soft-cover, horizontal-format, 8 1/2" x 11" book by Jim Mesko contains 100 black-and-white photos, 13 paintings by Don Greer, 3-view drawings of the A-20C and A-20G, and many drawings of aircraft details. The text describes the Douglas Model 7B of 1938, and the DB-7, DB-7A, DB-7B, A-20A, A-20B, A-20G, A-20J, and P-70. It is published by Squadron/Signal Publications; the price is \$4.95.



### Cobra in the Clouds

The title of John Stanaway's book refers to the squadron insignia of the 39th Fighter Squadron, which was reportedly designed by Walt Disney Studios while the squadron was operating with P-39 Airacobras. This book is a combat history of the 39th from its activation as the 39th Pursuit Squadron at Selfridge Field, Michigan, on February 1, 1940. After stateside training the squadron began its first tour of duty with the 35th Fighter Group at Port Moresby, New Guinea, on June 2, 1942. Thereafter, it fought in New Guinea and the Philippines until the Japanese surrender, when it became part of the occupation forces. The squadron then fought throughout the Korean War, returned to Japan, and was deactivated on December 8, 1957. It has been reactivated several times since, most recently on July 1, 1977, and as of 1980 was flying F-4Es. Most of the text and photos concentrates on the squadron's combat in World War Two and Korea — the text includes numerous combat reports by individual pilots.

The 48-page, 8 1/2" x 11", soft-cover book contains 83 black-and-white photos as well as lists of aces assigned to the squadron (14 in WWII, including Tommy Lynch with 16 victories with the 39th), squadron commanders, and aircraft types used by its pilots. It is published by Historical Aviation Album, P. O. Box 33, Temple City, CA 91780; the price is \$6.50 plus \$1.00 postage.

### Air Force Combat Units of World War II

Originally published by the USAF Historical Division in 1961 and reprinted in 1980 by Zenger Publishing Co., Inc., P. O. Box 42026, Washington, DC 20015, this 506-page, 6 1/4" x 9 1/2", hard-cover book edited by Maurer Maurer contains brief histories of the groups, wings, divisions, commands, and air forces active during WWII. There is a chronology of each unit's history, stations, commanders, campaigns, decorations, emblem (if any), and squadrons attached (for groups) or groups attached (for wings). A black-and-white illustration and a full heraldic description explain each emblem. Indexes and glossaries make the book easy to use. The price is \$21.95.



### Combat Squadrons of the Air Force in World War II, History and Insignia

Edited by Maurer Maurer and published by the USAF Historical Division in 1969 to complement the volume described above, this hard-cover, 842-page, 6 1/4" x 9 1/2" book describes 1,226 combat squadrons active in WWII. Each squadron's lineage, assignments, stations, aircraft, operations, service streamers, campaigns, decorations, and emblem (if any) are described. There is an index. The book is now published by Zenger Publishing Co., Inc.; the price is \$29.95.

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**Sticky clay.** How often have you wished for three, four, or five hands? Or wished you had a better tool than that super catapult, the tweezer, for picking up and holding small parts? The perfect answer is a British product called Bostik Blu-Tack. It is marketed in the U. S. by USM Corp., Bostik Division, Boston House, Middleton, MA 01949. It looks like modeling clay but acts as a clean working glue. I use it to hold parts together for checking when doing conversions. I also put a slab of it under my bottle of liquid glue so I won't knock it over. I roll it into a thin sausage to pick up small parts, and to attach figures to my painting stand.

Dick Hirdes

**Get down low.** Models are most interesting when photographed at simulated eye level, so wind down your tripod until the center of the lens is five or six scale feet above whatever surface the model is resting upon.

Burr Angle, photo by Paul Boyer

**Clip-on sanding discs.** The Merit clip-on sanding attachment has become the most valuable single tool I own. Although the discs come in a variety of sizes, I find that the 1½"-diameter disc is best suited for hobby work. The ⅜" shank fits a standard Dremel tool. Its greatest feature is that the sanding discs snap on and off easily, allow-

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*Shep Paine*



**Miniature sander.** A small sanding block can be made from a rubber eraser found in school bookstores. Simply cut a slot at each end, insert a strip of sandpaper, and anchor it with thumbtacks. The rubber eraser is firm yet resilient, just right for delicate sanding jobs.

*Ed Kolbush*



**Plastic wool.** 3M's Home 'n Hobby Pad is a plastic substitute for steel wool and comes in fine, medium, and coarse grades. It's great for rubbing down primer or removing minor imperfections in finish coats. Its fibrous structure does not load up and can be rinsed clean. Look for it at hardware stores, art supply stores, and supermarkets.

*Ed Kolbush*

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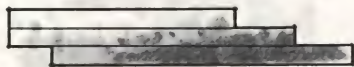
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**Wood grain effect.** A polished wood propeller on a small scale biplane looks great, and it's not difficult to do. Paint the propeller with the shade of brown that comes closest to the wood color you want to simulate. Next, using an old, worn fine-tip brush, lightly streak a darker brown color from a fresh bottle of paint. Use light, swirling strokes for the best effect. Keep the bristles of the brush spread out and the paint fresh at the tips of the bristles. Use photos of real wooden propellers for reference.

David Longe

Laminate sheet plastic to rough shape.



File and sand to final shape.

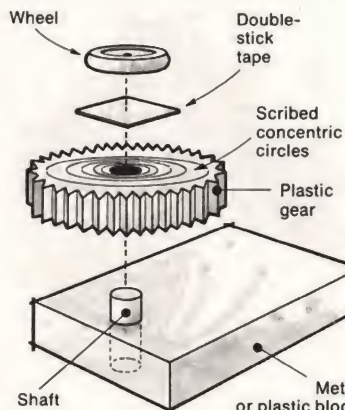


Finished air scoop



**Plastic laminate.** I have had great success fabricating parts by using laminated sheet plastic bonded with liquid cement. First, I laminate the plastic to the rough shape I need, let the assembly dry for 24 hours, then file and sand to come up with the final shape. I have made cooling scoops, nose cones, and pylons with this method, but just about anything can be produced this way.


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**Miniature turntable.** Here is a gadget that makes it easy to paint wheels and tires. Purchase a plastic gear from a radio and television parts supply store and slip it on to an axle mounted on a block made from metal or plastic. With a circle template, scribe concentric circles on the top of the gear to ease centering of the wheel. Attach the wheel to the gear with double-stick tape. Turn the gear with your finger as you hold the paintbrush on the wheel. Allow the wheel to dry thoroughly before painting the other side.

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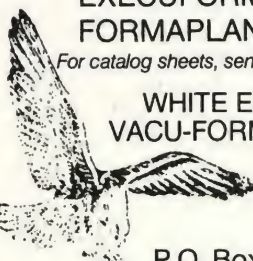


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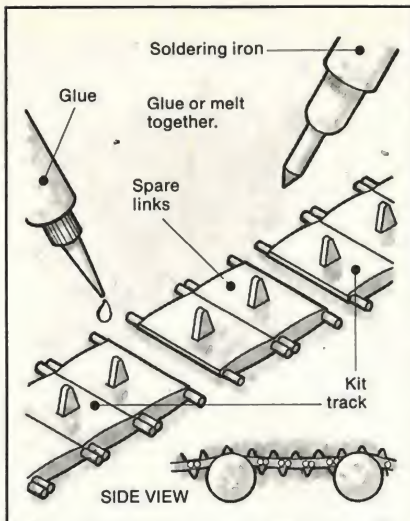
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*Melvin Mays*

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*Edward John Wojcik*



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*Dick Hirdes*

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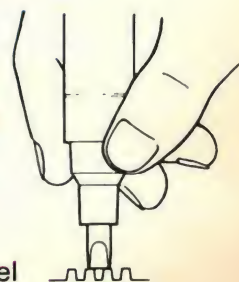


Display case holds twelve of the most popular detailing colors.

field accessories to diorama setups and much more.

## A Perfect Match For MRC-Tamiya Acrylic Paints

The free-flowing paint in these enamel markers can be applied over MRC-Tamiya acrylics. Works beautifully over lacquers, too. It lets you do striping and lettering without worrying about ruin-



Use on raised surfaces

ing your undercoat. By the same token, you can use Tamiya acrylics over the markers to get results never before achievable. To make it simple, we've named, coded and color-matched the markers to our acrylics.

## A Little Marker Goes A Long Way

Offered in the 12 most popular detailing colors, MRC-Tamiya markers will revolutionize model finishing. Perfect for glass, metal and wood, as well as plastic. And there is enough paint in these simple to use markers to completely paint 15 1/24 scale cars, so just think of how much detailing you can do. Now, that's an economical finishing tool.

MRC-Tamiya enamel paint markers... they'll make a professional out of you.



Paint window frames

Detail painting

MRC-Tamiya Paint Markers... for detailing cars, tanks, armor, ships, planes and all your other prized models.

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